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ENVIRONMENTAL ASSESSMENT

Crown Boundary Settlement Act

Phase 3 Land Exchange



JULY • 2000

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DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION



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STATE OF MONTANA

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August 18, 2000

Dear Interested Person:

Previously you were sent a copy of the Crow Boundary Settlement Act Environmental Assessment. The transmittal letter indicated that the hearing dates and times were enclosed, but that information was inadvertently omitted. That information is printed on the reverse side of this letter. Again, you may make oral comments on the Environmental Assessment at the hearings or you may send written comments postmarked by September 25, 2000 to either of the addresses below.

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Department of Natural Resources
and Conservation
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Dillon Field Office
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Dillon MT 59725-9431

Questions regarding the Environmental Assessment, meetings, or the review process can be directed to either the DNRC (406-444-6699 or wwetzel@state.mt.us) or the BLM (406) 683-8036.

Sincerely,

A handwritten signature in black ink that reads "Wayne A. Wetzel".

Wayne A. Wetzel
Special Projects Coordinator

Crow Boundary Settlement Act Phase III Exchange Hearings			
County	Date	Place	Time
Big Horn	September 11, 2000	County Courthouse, 121 W. 3 rd Hardin, MT	7:00- 9:00 p.m.
Custer	September 12, 2000	Rm. 106 Miles Community College, Miles City, MT	7:00- 9:00 p.m.
Fallon	September 13, 2000	Senior Citizens Center, Baker, MT	7:00- 9:00 p.m.
Carter	September 14, 2000	County Courthouse Ekalaka, MT	1:00- 3:00 p.m.
Powder River	September 14, 2000	County Courthouse Broadus, MT	7:00- 9:00 p.m.
Yellowstone	September 15, 2000	BLM State Office 5001 Southgate Drive Billings MT 59101	7:00- 9:00 p.m.
Chouteau	September 18, 2000	Law Enforcement Facility 1215 Washington Ft. Benton, MT	1:00- 3:00 p.m.
Blaine	September 18, 2000	Senior Citizens Center 116 S. Main Harlem, MT	7:00- 9:00 p.m.
Phillips	September 19, 2000	BLM Office 501 S. 2 nd E. Malta, MT	7:00- 9:00 p.m.
Valley	September 20, 2000	Community Hall, Opheim, MT	7:00- 9:00 p.m.
Fergus	September 21, 2000	DFWP Office 2358 Airport Rd Lewistown, MT	7:00- 9:00 p.m.

Contents

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1.0	INTRODUCTION AND BACKGROUND	1
1.1	Background	1
1.2	Purpose and Need for the Proposed Action	1
1.3	Public Scoping	3
1.4	Conformance with Land Use Plans	4
1.4.1	BLM Lands	4
1.4.2	State Land	5
1.5	Relationship to Statutes, Regulations, Mutual Agreements, or other Plans	6
2.0	PROPOSED ACTION AND ALTERNATIVES	6
2.1	Proposed Action	6
2.1.1	Proposed Action (Exchange Alternative)	6
2.2	Other Alternatives	7
2.2.1	No Action	7
2.2.2	Mitigated Exchange Alternative	7
2.2.3	Selection of other BLM Lands	12
2.2.4	Other Alternatives Considered but Not Carried Forward	12
3.0	AFFECTED ENVIRONMENT	25
3.1	BLM Lands	25
3.1.1	General Geography, Topography and Aesthetics	25
3.1.2	Climate	27
3.1.3	Groundwater, Geology and Mineral Potential	28
3.1.4	Surface Water Rights	31
3.1.5	Vegetation	31
3.1.5.1	Rare Plants	37
3.1.5.2	Noxious Weeds	38
3.1.6	Wildlife Habitat and Fisheries	38
3.1.6.1	Blaine County Wildlife	39
3.1.6.2	Carter County Wildlife	40
3.1.6.3	Chouteau County Wildlife	40
3.1.6.4	Custer County Wildlife	40
3.1.6.5	Fallon County Wildlife	41
3.1.6.6	Fergus County Wildlife	41
3.1.6.7	Phillips County Wildlife	42
3.1.6.8	Powder River County Wildlife	42
3.1.6.9	Richland County Wildlife	42
3.1.6.10	Rosebud County Wildlife	42
3.1.6.11	Valley County Wildlife	43
3.1.6.12	Wibaux County Wildlife	43
3.1.6.13	Threatened and Endangered Species	43
3.1.7	Recreation	44
3.1.8	Cultural Resources	44
3.1.9	Access	45
3.1.10	Socioeconomics	45
3.1.10.1	Timber, Grazing and Agricultural Lease Revenue	45
3.1.10.2	Payment in Lieu of Taxes	46

3.1.10.3	Land Values	48
3.1.11	Hydrologic and Soil Resources	50
3.2	State Lands	52
3.2.1	General Geography, Topography and Aesthetics	52
3.2.2	Climate	52
3.2.3	Groundwater, Geology and Mineral Potential	52
3.2.4	Surface Water Rights	55
3.2.5	Vegetation	57
3.2.5.1	Rare Plants	58
3.2.5.2	Noxious Weeds	60
3.2.6	Wildlife Habitat and Fisheries	61
3.2.6.1	Threatened and Endangered Species	61
3.2.7	Recreation	61
3.2.8	Cultural Resources	62
3.2.9	Access	62
3.2.10	Socioeconomics	62
3.2.10.1	Timber and Grazing Revenue	62
3.2.10.2	Payment in Lieu of Taxes	62
3.2.10.3	Land Values	65
3.2.11	Hydrologic and Soil Resources	65
4.0	CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES	68
4.1	Impacts of the Proposed Action	68
4.1.1	General Geography, Topography and Aesthetics	68
4.1.2	Climate	70
4.1.3	Groundwater, Geology and Mineral Potential	70
4.1.4	Surface Water Rights	70
4.1.5	Vegetation	71
4.1.5.2	Rare Plants	73
4.1.5.3	Noxious Weeds	73
4.1.6	Wildlife Habitat and Fisheries	73
4.1.6.1	Threatened and Endangered Species	74
4.1.7	Recreation	74
4.1.8	Cultural Resources	76
4.1.9	Access	76
4.1.10	Socioeconomics	76
4.1.10.1	Grazing	76
4.1.10.2	Timber	80
4.1.11	Hydrologic and Soil Resources	80
4.2	Impact of No Action	80
4.2.1	General Geography, Topography and Aesthetics	81
4.2.2	Climate	81
4.2.3	Groundwater, Geology and Mineral Potential	81
4.2.4	Surface Water Rights	81
4.2.5	Vegetation	81
4.2.5.1	Rare Plants	81
4.2.5.2	Noxious Weeds	81
4.2.6	Wildlife Habitat and Fisheries	81

4.2.6.1	Threatened and Endangered Species	82
4.2.7	Recreation	82
4.2.8	Cultural Resources	82
4.2.9	Access	82
4.2.10	Socioeconomics	82
4.2.10.1	Timber and Grazing Revenue	82
4.2.10.2	Payment in Lieu of Taxes	82
4.2.11	Hydrologic and Soil Resources	83
4.3	Impact of the Mitigated Exchange Alternative	83
4.3.1	General Geography, Topography and Aesthetics	86
4.3.2	Climate	86
4.3.3	Groundwater, Geology and Mineral Potential	86
4.3.4	Surface Water Rights	86
4.3.5	Vegetation	86
4.3.5.1	Rare Plants	87
4.3.5.2	Noxious Weeds	87
4.3.6	Wildlife Habitat and Fisheries	87
4.3.6.1	Threatened and Endangered Species	87
4.3.7	Recreation	87
4.3.8	Cultural Resources	87
4.3.9	Access	87
4.3.10	Socioeconomics	88
4.3.10.1	Delayed Implementation	88
4.3.10.2	Access Easements	88
4.3.10.3	Cost Sharing	88
4.3.10.4	Continued Lessee Preference	89
4.3.10.5	Private Exchanges	89
4.3.11	Hydrologic and Soil Resources	90
4.4	Comparison of Alternatives	90
5.0	CONSULTATION AND COORDINATION	96
5.1	Federal Agencies	96
5.2	State Agencies	96
5.3	Tribal Governments	96
5.4	Local Government	96
5.5	Non-Governmental Entities	96
6.0	LIST OF PREPARERS	97
6.1	Bureau of Land Management	97
6.2	Department of Natural Resources and Conservation	98
7.0	LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS RECEIVING COPIES OF THIS ENVIRONMENTAL ASSESSMENT	99

APPENDIX A —Legal Description of the Big Horn Canal Tract and the Veenhuis Ranch	109
Big Horn Canal	109
Veenhuis Ranch	109
APPENDIX B—Notice of Intent to Amend the West HiLine and Judith-Valley-Phillips Resource Management Plans	111
APPENDIX C—Mineral Report	115
APPENDIX D — US Fish and Wildlife Service candidate, threatened and endangered species, BLM species of special concern, and BLM watch species	133
APPENDIX E—DNRC Policy On Ground Breaking	135

List of Figures

Figure 1-1. 107th Meridian Settlement	2
Figure 2-1 State Lands In the CBSA Phase III Exchange	13
Figure 2-2 BLM Lands in the CBSA Phase III Exchange	14
Figure 2-3 BLM Lands in the CBSA Phase III Exchange	15
Figure 2-4 BLM Lands in the CBSA Phase III Exchange	16
Figure 2-5 BLM Lands in the CBSA Phase III Exchange	17
Figure 2-6 BLM Lands in the CBSA Phase III Exchange	18
Figure 2-7 BLM Lands in the CBSA Phase III Exchange	19
Figure 2-8 BLM Lands in the CBSA Phase III Exchange	20
Figure 2-9 BLM Lands in the CBSA Phase III Exchange	21
Figure 2-10 BLM Lands in the CBSA Phase III Exchange	22
Figure 2-11 BLM Lands in the CBSA Phase III Exchange	23
Figure 2-12 BLM Lands in the CBSA Phase III Exchange	24
Figure 3-1 Trust Lands Revenue Flow Chart	64
Figure 4-1 Bighorn Canal Tract	84
Figure 4-2 Veenhuis Ranch	85

List of Tables

Table 1-1	Montana Board of Land Commissioners -Land Exchange Criteria	5
Table 2-1	State Lands in the Phase III Crow Boundary Settlement Act Exchange	8
Table 2-2	BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	9
Table 2-2	BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	10
Table 3-1	General Geography, Topography and Aesthetics of BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	26
Table 3-2	Selected Climatic Data Summary	28
Table 3-3	Groundwater, Geology and Mineral Potential of BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	30
Table 3-4	Water Rights on BLM Land in the Phase III CBSA Exchange	32
Table 3-5	Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)	35
Table 3-6	Wildlife and Habitat on BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	38
Table 3-7	Access to BLM Lands in the Phase III Crow Boundary Settlement Act Exchange	45
Table 3-8	Revenue from BLM Phase III CBSA Lands	46
Table 3-9	Change in State Equalization Payments From the Phase III Exchange	48
Table 3-10	Appraised Value of Phase III BLM Lands	49
Table 3-11	BLM Lands crossed by Perennial Streams in the Phase III Exchange	50
Table 3-12	General Soils for BLM Exchange Tracts	51
Table 3-13	General Geography, Topography and Aesthetics of State Lands in the Phase III Crow Boundary Settlement Act Exchange	53
Table 3-14	Groundwater, Geology and Mineral Potential of State Lands in the Phase III Crow Boundary Settlement Act Exchange	54
Table 3-15	Water Rights on State Land in the Phase III CBSA Exchange	55
Table 3-16	Vegetative Type Characteristics for State Lands (distinguishing species in bold)	58
Table 3-17	Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur on Phase III State Exchange Lands (Lesica and Shelly 1991; MNHP Database 2000)	60
Table 3-18	State Lands crossed by Perennial Streams in the Phase III Exchange	61
Table 3-19	Revenues in 2000 from State Lands Proposed for Exchange (in Dollars)	63
Table 3-20	Appraised Value of State Lands in CBSA Phase III Exchange	66
Table 3-21	General Soils for State Lands Exchange Tracts	67
Table 4-1	BLM Lands Proposed for Equal Value Exchange	69
Table 4-2	BLM Tracts with Potential Future Cultivation in CBSA Phase III	72
Table 4-3	Potential State Revenues from BLM Lands in the Proposed CBSA Phase III Exchange	78
Table 4-4	Comparison of Revenue Potential for Phase I -III of CBSA Exchange	79
Table 4-5	Alternative Comparison and Impact Summary	91

1.0 INTRODUCTION AND BACKGROUND

1.1 *Background*

The Crow Boundary Settlement Act of 1994 mandates, among other things, land exchanges between the State and federal government to redress a century-old boundary survey error. The Crow Indian Reservation was created in 1851. In 1868 a Treaty with the Crow Tribe formally established the 107th Meridian as the eastern boundary of the Reservation. In 1891 this eastern boundary was surveyed in an attempt to establish the specific on-the-ground location of the 107th Meridian. Later, as technology improved, it was discovered that this survey had strayed to the west of the actual on-the-ground location of the 107th Meridian. The effect of this survey error meant that, for years, the Crow Tribe had been denied land that had actually been granted to it from the Wyoming-Montana border on the south to the Yellowstone River on the north, including land along the western edge of the Northern Cheyenne Indian Reservation.

For many years after the discovery of the survey error the Crow Tribe sought resolution of the problem via Congressional legislation. Finally, on November 2, 1994 the Crow Boundary Settlement Act (CBSA) was enacted and signed into law by President Clinton. Figure 1-1 is a map representation of this survey error and indicates separate parcels that are specifically addressed in the CBSA. This legislation, in part, provided for the following:

1. It reaffirmed the true 107th Meridian location as the eastern boundary of the Crow Reservation. This re-affirmation had the effect of moving the erroneous monumented boundary easterly to its correct on-the-ground location coinciding with the 107th Meridian (Parcel 1 in Figure 1-1).
2. It created an agreement whereby the Crow Tribe relinquished its claim to land which was located in the Northern Cheyenne Indian Reservation as a

result of correcting the on-the-ground location of the 107th Meridian (Parcel 2 in Figure 1-1).

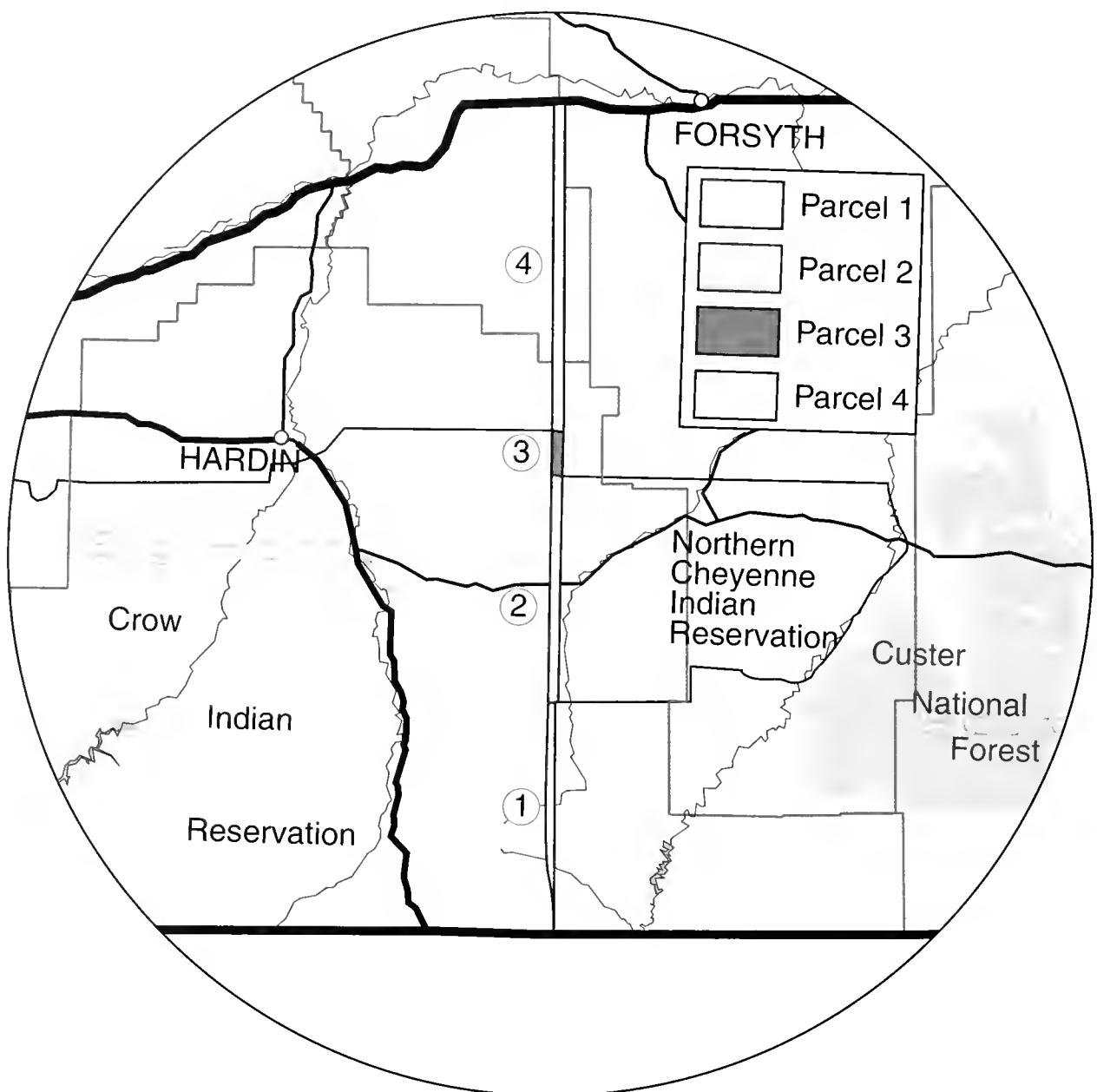
3. It provides for a relinquishment by the Crow Tribe of surface and mineral ownership claims on Parcels 3 and 4 (Figure 1-1).
4. In compensation for relinquishment of lands on the Northern Cheyenne Reservation and north to the Yellowstone River, it created a mechanism whereby the Crow Tribe could acquire State-owned land and private land located inside of the Reservation through the land exchange process. Public land managed by the Bureau of Land Management (BLM) and located outside of the Reservation is to be used as a means of completing the required land exchanges.

State lands on the Crow Reservation (surface ownership only) originally were granted to the State of Montana by Section 16 of the 1920 Crow Allotment Act to provide for the education of the Crow Indian children in the public schools. These State lands were originally Crow Tribal trust lands and were purchased from the tribe by the federal government and granted to the State for the maintenance of the common schools on the reservation. If the exchanges are approved, these State lands will once again become Crow Tribal trust lands.

1.2 *Purpose and Need for the Proposed Action*

The purpose of this Environmental Assessment is to comply with the National Environmental Policy Act (NEPA) and the Montana Environmental Policy Act (MEPA) to address the impacts of the third exchange of land (designated Phase III) which has been proposed pursuant to the CBSA. This exchange of land is between BLM and the Montana Department of Natural Resources and Conservation (DNRC). The BLM lands are located in central, northeastern, and southeastern Montana under the jurisdiction of the Lewistown and Miles City BLM Field Offices. The State lands consist

Figure 1-1. 107th Meridian Settlement



of the remaining school trust parcels and tracts¹ not previously exchanged, and are generally in the southeastern and western portions of the Crow Reservation².

Three separate exchanges were contemplated to exchange the State lands within the Crow Reservation. While this environmental assessment (EA) addresses only the last of these exchanges, understandings between the agencies, programmatic agreements, and much of the environmental information developed and impacts analyzed are common to each exchange. Thus, this EA incorporates by reference and is tiered³ to the EAs prepared for previous exchanges.

1.3 Public Scoping

Initially, before any exchanges were proposed, the CBSA Steering Committee⁴ sponsored two public hearings in Billings and one at Crow Agency to inform the public of the details of the CBSA and the concepts relative to land exchanges which could be used to implement the law. Generally, most non-Indian lessees with grazing leases on the State land in the Crow Reservation, which would be exchanged out of State ownership, strongly objected to the action. Their reasons mostly related to the impacts it could have on their ranching operations because they could not be guaranteed a long-term continuation of a grazing lease on that land after ownership had transferred. The Crow Tribe and the tribal members who spoke at the hearings were in strong support of land exchanges in order to transfer all State-owned land to the United States, to be held in trust for the Crow Tribe.

After the third land exchange proposal had been developed, agreed upon by DNRC and the BLM, and

approved in concept by the Land Board, DNRC and BLM held eight public scoping meetings. These meetings were held at 7:00 p.m. at the following locations and dates:

May 19, 1999—	Big Horn County Court-house, Hardin
June 7, 1999—	Powder River County Courthouse, Broadus
June 8, 1999—	Baker Senior Citizen's Center, Baker
June 9, 1999—	Glendive Public Library, Glendive
June 10, 1999—	Miles Community College, Rm. 106, Miles City
June 15, 1999—	Opheim Town Hall, Opheim
June 16, 1999—	Senior Citizen Center, Harlem
June 17, 1999—	BLM Office, Airport Road, Lewistown

The scoping meetings were generally poorly attended, with a total of 18 persons attending the eight different meetings. Four persons attended earlier public hearings for the Phase II exchange in Baker and Miles City, but were primarily interested in commenting on the Phase III proposal. Eleven of these 22 persons were BLM permittees using the lands selected for the Phase III exchange. The remainder of attendees were reporters for local media, politicians or their representatives, and other interested parties.

The most common interest at the scoping meetings was an explanation of why a particular BLM permittee's lands were chosen for exchange, instead of other lands. In some cases, problems such as weed infestations, multiple permittees on a single parcel, and limited

Terms like tract, parcel, property, and lands are used interchangeably in this EA in general usage referring collectively to lands involved in the exchange. When describing specific lands, the term "parcel" is generally used for a property that has a unique, single legal description and the term "tract" is used when two or more parcels that are adjacent or in close proximity are described by a common identifier or tract name.

Since both state and tribal "trust" lands are mentioned in this EA, it is important not to confuse the two. State trust lands are owned by the State of Montana and are managed to provide income to the school trust fund. Tribal trust lands are owned by the Crow Tribe and are held in trust by the federal government for the benefit of the Crow Tribe.

Tiering is the incorporation by reference of the general discussion and concentrating solely on the issues specific to environmental documents subsequently prepared. (40 CFR 1508.28)

⁴ The CBSA Steering Committee consists of representatives from the Montana Association of Counties, Montana Department of Natural Resources and Conservation, the Crow Tribe, the Bureau of Land Management, the Solicitor's Office of the Department of Interior, and is chaired by the Bureau of Indian Affairs representative.

public access were mentioned. There were concerns about the higher rate per Animal Unit Month (AUM) charged by the State and the economic impact that might have on BLM permittees as lands are exchanged and they became State lessees. The only person commenting at the Hardin meeting had questions regarding the process used in initiating three-way exchanges.

1.4 Conformance with Land Use Plans

1.4.1 BLM Lands

BLM policy regarding the exchange of public lands was developed specifically in the Supplement to State Director Guidance for Resource Management Planning in Montana and the Dakotas for Land Pattern Review and Land Adjustment of 1984, and the State Director Guidance-Access of 1989; which established retention and disposal zones throughout Montana. However, as Resource Management Plans (RMPs) were completed, the criteria developed in those RMPs for retention or disposal of public land superceded the criteria in the aforementioned 1984 document. The Big Dry Resource Management Plan (RMP) of 1996, in Chapter 2 "Lands" (pp. 17-18), reiterates the criteria for disposal and retention areas. Similar language is found in the West HiLine and Judith-Valley-Phillips RMPs, although these RMPs were more "tract specific". The lands selected by the State of Montana generally lie within the disposal zones established by the RMPs, however some of the lands are "retention" lands, as identified in those RMPs.

Criteria for inclusion of retention lands is also discussed in the RMPs. For example, in the Big Dry Resource Management Plan under "Retention Areas" (page 18) states, "Individual tracts or parcels in the retention areas may be disposed or repositioned through sale or exchange when significant management efficiency, greater public values, or other objectives would be met." The Congressional mandate for exchange in the Crow Boundary Settlement Act of 1994 provides a significant "other objective" that justifies the use of retention lands.

Some of the BLM lands identified for exchange were not analyzed for disposal in the West HiLine and

Judith-Valley-Phillips Resource Management Plans. These lands are identified in the Notice of Intent to Amend, which can be found in Appendix A. This environmental assessment will analyze the effects of disposing of those lands and will provide the basis for amending those RMPs to allow for disposal of the affected BLM lands.

Regulations guiding the management of State trust lands, including those regarding exchanging of lands, focus on providing the greatest revenue to the public schools as the primary goal (See 1.4.2 State Lands). In order to effect the mandates of the Crow boundary Settlement Act of 1994 and still remain within this focus, the State of Montana has selected some retention lands it believes will enhance the revenue-generating capability of the State. Assumptions related to potential impacts of inclusion of these lands are discussed in other chapters of this document. The inclusion of the retention lands is consistent with the latitude granted within the RMPs and with the direction of the Crow Boundary Settlement Act of 1994 to include such areas, if necessary, to accomplish mandated exchanges.

The proposed exchange is also in conformance with the Supplement to State Director Guidance for Resource Management Planning in Montana and the Dakotas for Land Pattern Review and Land Adjustment. This supplement was published in 1984 to provide guidance for all major types of land adjustment. Three types of criteria were established to provide guidance in categorizing the public lands and making decisions concerning specific land adjustment actions—retention, disposal, and acquisition. Criteria in the supplement were used to identify retention and disposal zones for Montana. Retention zones predominantly contain better blocked public lands that meet the retention criteria, define areas where BLM intends to retain existing public lands, and hopes to acquire additional lands through exchange. Disposal zones are areas where BLM lands have been identified for potential removal from BLM administration—preferably through exchange. Most of the BLM parcels being considered for use in this exchange are in disposal zones. However, BLM has the discretion to include retention lands in the exchange to serve an important public purpose, such as those embodied in the Crow Boundary Settlement Act.

1.4.2 State Land

DNRC does not have a formal land use plan, but does have a mandate for multiple use management (MCA 77-1-203, et.seq.) and has adopted a State Forest Land Management Plan that applies to designated State forest land tracts. DNRC is in the process of completing a transitional land management plan that would guide use for purposes of commercial, industrial, or residential development and will also examine wildlife habitat and open space use. Further, in 1994, the Land Board

established a policy with seven criteria to be considered in the evaluation of land exchanges (See Table 1-1). These criteria are applied to both the State and BLM land and form the basis for a Land Board decision to exchange lands. The Board recognizes that some land exchanges may clearly be in the State's best interest, but may fail to satisfy one or more of the seven criteria in Table 1-1. The first three criteria are based on legal requirements and cannot be waived. In some cases, not all of the criteria will apply to a proposed exchange.

Table 1-1 Montana Board of Land Commissioners -Land Exchange Criteria

Criteria	Description
1. Equal or greater value	Land to be acquired by the State must be at least as valuable as the State land being exchanged. The starting point for this determination is the value, in terms of money, of real estate in a typical market as determined through an appraisal. An attempt should also be made to include location, proximity to public lands, recreational opportunities, scenery, and other amenities in determining relative values.
2. State land bordering on navigable lakes and streams	State lands that border navigable lakes, streams, and other bodies of water with significant public use values may only be exchanged for lands that border similar bodies of water.
3. Equal or greater income to the trust	A land exchange must result in the State receiving equal or greater income for the trusts.
4. Equal or greater acreage	As a general rule, the Board prefers to receive equal or greater acreage, but will consider receiving less acreage in return for substantially higher value or income, or both.
5. Consolidation of State lands	A land exchange should be at least neutral in its net effect on the consolidation of State land. An exchange should not sever a mineral estate from a surface estate. The DNRC will place priority on exchanges that result in consolidation of State lands.
6. Potential for long term appreciation	The land acquired by the State should be as likely to increase in value or revenue potential as the State land exchanged.
7. Access	A land exchange should not diminish the amount of access to State lands or other public lands. Accessible State land that is proposed for exchange should be replaced with acquired lands that offer similar recreational opportunities.

1.5 Relationship to Statutes, Regulations, Mutual Agreements, or other Plans

The BLM land proposed for exchange would be processed in accordance with Section 206 of the Federal Land Policy and Management Act of 1976, as amended, and the regulations at 43 CFR 2200. The State land proposed for exchange would be processed in accordance with the State Land Board Land Exchange Policy, which enumerates constitutional, statutory, and advisory mandates to be met with any land exchange involving school trust lands. Where there is a current BLM grazing lessee, that lessee would continue as the lessee of record when BLM land is transferred to the State, by mutual agreement of the agencies. Upon expiration of the State lease, the lessee would be subject to competition for the lease and would have the opportunity to meet or match a competitive bid for the grazing privileges.

The BLM lands selected for potential exchange are located in Rosebud, Custer, Carter, Chouteau, Fallon, Richland, Blaine, Phillips, Valley, Fergus, Powder River and Wibaux Counties and the State lands are located in Big Horn and Yellowstone Counties. None of the counties has a county-wide comprehensive land use plan which would affect this action.

Most of the BLM properties are currently leased for livestock grazing. Transfer of ownership of those lands would be completed in conformance with the grazing regulations at 43 CFR 4120. This regulation provides for a two-year notification to grazing lessees prior to the conveyance of the BLM land. All of the State lands are also currently leased for livestock grazing and the transfer of the ownership of those lands would be completed in accordance with MCA 77-2-201, et.seq. Further, DNRC has agreed to allow BLM to retain third-party rights of record for access purposes on all public lands that have existing roads or trails that provide access to adjacent State or other federal lands. Also, no mineral values are involved or are expected to be transferred. Finally, for BLM lands acquired by the State, the State will recognize existing BLM lessees as the lessees of record for purposes of establishing a State preference right. BLM lands with no existing lessee

would be leased to the highest bidder, who thereafter would hold the State preference right.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

2.1.1 Proposed Action (Exchange Alternative)

In a general sense, this alternative involves the voluntary exchange of all State lands on the Crow reservation for federal lands of equal value managed by BLM. The CBSA mandates:

“The Secretary shall negotiate with the State of Montana for the purpose of exchanging public lands within the State of Montana for State trust lands within the Crow Reservation having a total value substantially equal to the value of the surface estate of the approximately 46,625 acres of State trust lands obtained by the State of Montana...”

By 1923, the State had selected 44,800.74 acres of its entitlement on the Crow Reservation and had formally declined selection of the remaining acres entitled to the State. Of those 44,800.74 acres once owned by the State, approximately 33,289.50 acres were still in State ownership at the beginning of the exchange process. The CBSA places an initial priority for the first five years after passage of exchanging BLM lands for the remaining State land on the reservation. BLM must process a subsequent assembled exchange in order to acquire private land inside of the Crow Reservation which would be equivalent to the value of approximately 11,511 acres no longer owned by the State.

The specific proposed action for Phase III is to exchange all of the State lands described in Table 2-1 for some or all of the BLM lands described in Table 2-2. In

order to assist BLM to meet the mandate of the CBSA, all State lands under consideration will be exchanged with the BLM for lands of equivalent value, as determined by appraisal and in accordance with the Land Board Exchange Policy. Of the BLM lands, those that offer the best opportunity to meet the Land Board Exchange Policy will be the first acquired through exchange. Generally these are lands with present or future potential to provide a diverse revenue stream to the school trust, such as lands providing both timber and grazing or lands that have been previously broken and could meet the strict criteria for being cultivated again under State ownership. Since the value of the BLM lands will slightly exceed the State lands, some of the BLM land will not be exchanged. Those BLM lands not exchanged with the State will be considered for exchange in the private exchange program (Phase IV) that BLM will initiate to satisfy the full requirements of the CBSA. Thus, all of the BLM lands are described in Chapter 3—Affected Environment, but only those lands that will be proposed for an equivalent value exchange will be included in the analysis of the impacts of the proposed action described in Chapter 4. Table 4-1 at the beginning of Chapter 4 will show more specifically the lands proposed for exchange with the State.

The State land consists of 59 properties totaling 20,857.91 acres. Some of these parcels are contiguous to other State parcels. Where this occurs, the parcels are given one tract identity as shown in Figure 2-1. In many cases, multiple parcels are leased by the same lessee. The 59 parcels are divided among 25 lessees. The Phase III State exchange parcels consist of the remaining State lands on the Crow Reservation and are generally located in the southeastern portion of the reservation or are scattered through the area west of the Big Horn River.

The BLM land consists of 100 properties totaling 27,034.59 acres. In Table 2-2, these properties, as with the State lands, are combined for convenience into “tracts,” with a single tract identifier, where they are contiguous or in close proximity. Tract identifiers are used to identify parcels and tracts throughout the environmental assessment without having to resort to the legal descriptions. Descriptive terms in the identities denote nearby topographic or drainage features and are used only for this exchange. The BLM lands selected are under the jurisdiction of a variety of BLM

field offices and field stations. Thirty-three parcels were selected from the Miles City Field Office totaling 15,283.78 acres; 19 parcels totaling 3,902.77 acres from the Glasgow Field Station; 27 parcels totaling 4,797.61 acres under the Malta Field Office; and 21 parcels (3,050.43 acres) under the Lewistown Field Office. The BLM lands are shown on Figures 2-2 to 2-12. The names on the maps (Figures 2-1 to 2-12) correspond with the tract identifiers listed in Tables 2-1 and 2-2.

The BLM parcels in Blaine and Fergus counties, which are listed in Appendix B, were not specifically identified for disposal in the West HiLine and Judith-Valley-Phillips Resource Management Plans. The proposed disposal of these BLM lands will be concurrently analyzed in this environmental assessment, along with the other BLM lands to be exchanged.

2.2 Other Alternatives

2.2.1 No Action

This alternative is required by NEPA and MEPA and would be considered a viable alternative if it is determined that no action (i.e. no exchanges) is in the public's interest, especially for the State, when considering the values received, the annual benefit to the school trust, and the environmental impacts of the proposed action. This alternative will be the result if the State does not exchange lands with the BLM. However, it would not mean that exchanges would not occur, since BLM will still be under a CBSA mandated obligation to provide to the Crow Tribe, through its private exchange program, the equivalent of any lands not exchanged with the State. That is, if any of the 33,289 acres owned by the State at the time of CBSA passage are not exchanged, then the BLM private exchange program will be increased, so that the overall exchange benefiting the Crow Tribe is still based on the value of approximately 44,800.74 acres selected by the State in the 1920 Crow Allotment Act.

2.2.2 Mitigated Exchange Alternative

For State land within the Crow Reservation, this alternative has potential for reducing or mitigating

Table 2-1 State Lands in the Phase III Crow Boundary Settlement Act Exchange

Table 2-1 State Lands in the Phase III Crow Boundary Settlement Act Exchange

Legal Description- Principal Meridian Montana	Tract Identifier	County	Acres	Lease/Exp.
2NW4, S2, Sec. 4 T1S R28E	Pryor Creek	YE	400	861/2001
Sec. 16 T1S R28E	Broken Leg Creek	YE	640	861/2001
Sec. 36 T2S R27E	East Buckeye Creek	YE	640	6637/2009
Lots 5-10, E2E2, SW4SE4, Sec. 36, T3S R25E	Stratford Hill	YE	324.35	1032/2002
Sec. 16, T3S R27E	Magpie Coulee	YE	640	4543/2004
Sec. 36, T3S R27E	Birdhead Creek	YE	640	4543/2004
Lots 1-4, S2N2, S2 Sec. 1, T4S R28E	Woody Mountain	YE	642.47	4545/2004
Lots 1-4, S2N2, S2 Sec. 4, T4S R28E	West Fork Woody Creek	YE	646.62	4545/2004
E2, Sec. 10, T2S R32E	Cottonwood Creek	BH	320	76/2001
W2, SE4, Sec. 11, T2S R32E	Cottonwood Creek	BH	480	76/2001
Sec. 22, T3S R30E	Little Woody Creek	BH	640	6679/2005
Sec. 23, T3S R30E	Little Woody Creek	BH	640	6680/2009
Lots 1-7, S2NE4, SE4NW4, E2SW4, SE4, Sec. 6, T3S R31E	Big Woody Creek	BH	625.2	8057/2005
Lots 1-4, E2, E2W2, Sec. 7, T3S R31E	Big Woody Creek	BH	624.02	8057/2005
Sec. 24, T4S R30E	Beauvais Creek	BH	640	9131/2009
NE4, Sec. 22, T4S R31E	Lower Beauvais Creek	BH	160	3577/2003
SE4, Sec. 22, T4S R31E	Lower Beauvais Creek	BH	160	2540/2003
NE4 Sec. 23, T4S R31E	Lower Beauvais Creek	BH	160	10080/2001
Sec. 9, T5S R30E	Muddy Creek	BH	640	6029/2005
Lots 1-4, S2N2, S2 Sec. 3, T5S R31E	Hay Coulee	BH	647.20	9768/2001
N2, SW4, Sec. 21, T5S R31E	Camp Four	BH	480	1174/2001
NW4, Sec. 28, T5S R31E	Camp Four	BH	160	2541/2007
N2S2, Sec. 1, T6S R32E	Lower Soap Creek	BH	160	6677/2009
Sec. 10, T6S R33E	Cottonwood Coulee	BH	640	9122/2002
SE4, Sec. 22, T6S R33E	Mission Coulee	BH	160	1369/2002
S2, Sec. 15, T6S R34E	N. Fork Good Luck Creek	BH	320	2363/2002
Sec. 16, T6S R34E	Rotten Grass Divide	BH	640	2363/2002
E2, Sec. 8, T6S R35E	Good Luck Creek	BH	320	4211/2003
W2NW4, W2SE4, SW4, Sec. 9, T6S R35E	Good Luck Creek	BH	320	4211/2003
S2NE4, S2, Sec. 8, T7S R28E	Dry Head Creek	BH	400	8059/2010
S2NE4, E2SW4, SE4, Sec. 9, T7S R28E	Dry Head Creek	BH	320	8059/2010
S2N2, S2, Sec. 10, T7S R28E	Dry Head Creek	BH	480	8059/2010
S2, Sec. 25, T7S R32E	Dry Soap Creek	BH	320	4600/2004
SE4, Sec. 26, T7S R32E	Dry Soap Creek	BH	160	4600/2004
NE4SW4, S2SW4, SE4, Sec. 32, T7S R32E	Soap Creek	BH	280	1370/2002
NE4, Sec. 36, T7S R32E	Dry Soap Creek	BH	160	4600/2004
Lots 3-4, Sec. 30, T7S R33E	Dry Soap Creek	BH	82.43	4600/2004
S2, Sec. 29, T7S R33E	Dry Soap Creek	BH	320	4601/2004
NW4NW4, Sec. 16, T7S R34E	Lower Lodgegrass Creek	BH	40	5202/2008
Sec. 36, T7S R34E	Alligator Creek	BH	640	5954/2004
Lot 4, Sec. 36, T7S R35E	Halfway Creek	BH	28.88	9477/2005
NW4, Sec. 13, T7S R36E	Little Owl Creek	BH	160	5693/2009
Lot 10, SW4SW4, Sec. 1, T7S R38E	Indian Creek	BH	84.85	9499/2000
S2SE4, Sec. 2, T7S R38E	Indian Creek	BH	80	9499/2000
Lots 5 and 6, Sec. 12, T7S R38E	Indian Creek	BH	83.45	9499/2000
S2, Sec. 12, T8S R34E	Crazy Creek	BH	320	234/2001
NW4, Sec. 13, T8S R34E	Crazy Creek	BH	160	234/2001
E2, SW4, Sec. 14, T8S R34E	Crazy Creek	BH	480	234/2001
NE4NW4, Sec. 16, T8S R35E	Wyola	BH	40	2893/2003
NW4SE4, S2SE4, Sec. 16, T8S R37E	Bear Creek	BH	120	1659/2002
S2, Sec. 20, T9S R33E	Dry Fork Coulee	BH	320	9942/2001
Lots 1-2, E2NW4, NE4, Sec. 30, T9S R33E	Dry Ridge	BH	315.67	9942/2001
Lots 3-4, E2SW4, SE4, Sec. 30, T9S R33E	Dry Ridge	BH	315.89	3958/2003
Lots 1-2, E2NW4, NE4, Sec. 31, T9S R33E	Dry Ridge	BH	316.88	3958/2003
SW4SW4, E2SE4, Sec. 16, T9S R34E	Black Gulch	BH	120	5700/2009
NE4, NE4SE4, Sec. 18, T9S R34E	Sport Creek	BH	200	2892/2008
S2NE4, SE4, Sec. 20, T9S R34E	Black Gulch	BH	240	5700/2009
NW4NW4, E2, S2NW4, SW4, Sec. 21, T9S R34E	Black Gulch	BH	600	5700/2009
NE4, Sec. 13, T9S R36E	Owl Creek	BH	160	2543/2007
Total			20,857.91	

Table 2-2 BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Table 2-2 BLM Lands in the Phase III Crow Boundary Settlement Act Exchange			
Legal Description- Principal Meridian Montana	Tract Identity	County	Acres
T5N, R38E, PMM, Sec 10: NWNW, S2SW, NWSW	Cache Coulee	Rosebud	160
T9N, R36E, PMM, Sec 6: lots 1-7, S2NE, SENW, E2SW, SE	Thebes Lake	Rosebud	630
T10N, R36E, PMM, Sec 30: lots 3,4, E2SW, SE	Blind Coulee	Rosebud	313.51
T10N, R36E, PMM, Sec 32: W2	West Blacktail Creek	Rosebud	320
T12N, R32E, PMM, Sec 24: E2	Rattlesnake Creek	Rosebud	320
T5S, R53E, PMM, Sec 15: all	Hay Creek	Powder River	640
T3S, R52E, PMM, Sec 35: lots 1-12, N2	Poker Jim Gulch	Powder River	746.8
T1S, R53E, PMM, Sec 4: lots 1-4, S2N2, S2	Butte Creek	Powder River	634.1
T4N, R53E, PMM, Sec 6: lots 1-11, S2NE, SENW, E2SW, SE	Kimball Creek	Custer	757.41
T5N, R52E, PMM, Sec 26: W2	Cottonwood Creek	Custer	320
T6N, R50E, PMM, Sec 2: lots 1-4, S2N2	Strevell Creek	Custer	321.64
T6N, R50E, PMM, Sec 24: all	South Strevell Creek	Custer	640
T6N, R51E, PMM, Sec 6: lots 1,2,4, SENE	N Fork Strevell Creek	Custer	156.62
T6N, R51E, PMM, Sec 30: lots 1-4, E2, E2W2	First Creek	Custer	619.8
T6N, R51E, PMM, Sec 32: all	Second Creek	Custer	640
T6N, R52E, PMM, Sec 30: lots 4,7,9-11,13,14, W2NESW, E2SESW, S2NWSESW, SWSESW	Mizpah	Custer	218.97
T6N, R53E, PMM, Sec 30: all (Lots 1-24 inclusive, E2	Home Creek	Custer	1207.48
T7N, R50E, PMM, Sec 30: lots 1,2, E2E2, NWNE, NENW	Ash Creek Divide	Custer	314.75
T7N, R51E, PMM, Sec 32: all	Strevell/Laney Divide	Custer	640
T7N, R51E, PMM, Sec 34: W2	South Laney Creek	Custer	320
T7N, R51E, PMM, Sec 36: W2NE, SENE, NWSE	Powder River	Custer	160
T4S, R55E, PMM, Sec 3: SW, W2SE	Pocochee /Adams Divide	Carter	240
T4S, R55E, PMM, Sec 10: N2NW, SESE	Pocochee /Adams Divide	Carter	120
T4S, R55E, PMM, Sec 14: all	N. Fork Dry Creek	Carter	640
T4S, R55E, PMM, Sec 15: NESE	N. Fork Dry Creek	Carter	40
T4S, R55E, PMM, Sec 21: NE	Dry Creek	Carter	160
T4S, R56E, PMM, Sec 29: S2	Dry Creek Ridge	Carter	320
T6N, R55E, PMM, Sec 8: all	Miles City Creek	Fallon	640
T6N, R55E, PMM, Sec 17: all	Miles City Creek	Fallon	640
T6N, R56E, PMM, Sec 1: lots 1-12, S2	Brush Creek	Fallon	776.96
T6N, R56E, PMM, Sec 12: all	Brush Creek	Fallon	640
T18N, R58E, PMM, Sec 6: lots 1-7, S2NE, SENW, E2SW, SE	Dry Creek	Wibaux	680.76
T24N, R53E, PMM, Sec 30: lots 3,4, E2SW, SE	E. Fork Redwater River	Ricbland	304.98
Subtotal—Miles City			15,283.78
T. 29 N., R. 21 E., PMM, Sec. 08, S2NE	Miles Butte	Blaine	80
T. 35 N., R. 22 E., PMM, Sec. 01, SE, N2SW, SESW	Murphy Coulee	Blaine	280
T. 35 N., R. 22 E., PMM, Sec. 02, S2	Murphy Coulee	Blaine	320
T. 35 N., R. 22 E., PMM, Sec. 11, W2;	Murphy Coulee	Blaine	320
T. 35 N., R. 22 E., PMM, Sec. 12, N2N2, SE	Murphy Coulee	Blaine	320
T. 35 N., R. 23 E., PMM, Sec. 07, Lot 1	Murphy Coulee	Blaine	36.88
T. 35 N., R. 23 E., PMM, Sec. 29, E2SW, W2SE	Hogeland Ridge	Blaine	160
T. 35 N., R. 23 E., PMM, Sec. 31, NENE	Hogeland Ridge	Blaine	40
T. 35 N., R. 23 E., PMM, Sec. 32, N2N2	Hogeland Ridge	Blaine	160
T. 35 N., R. 25 E., PMM, Sec. 14, S2SE	Turner South	Blaine	80
T. 35 N., R. 25 E., PMM, Sec. 21, E2	Turner Colony Northwest	Blaine	320
T. 35 N., R. 25 E., PMM, Sec. 22, W2NW	Turner Colony Northwest	Blaine	80
T. 35 N., R. 25 E., PMM, Sec. 32, E2NE	Turner Colony West	Blaine	80
T. 35 N., R. 25 E., PMM, Sec. 33, N2, SW, NESE	Turner Colony West	Blaine	520
T. 36 N., R. 24 E., PMM, Sec. 03, Lots 3,4	North Murray Coulee	Blaine	38.8
T. 36 N., R. 24 E., PMM, Sec. 10, N2, SE, SESW	Murray Coulee	Blaine	520
T. 36 N., R. 24 E., PMM, Sec. 14, N2NW, SWNW	Murray Coulee	Blaine	120
T. 36 N., R. 24 E., PMM, Sec. 15, N2	Murray Coulee	Blaine	320
T. 36 N., R. 26 E., PMM, Sec. 19, Lots 1,2, SWNW	Turner North	Blaine	107.09
Subtotal—Havre Office			3,902.77
T. 24 N., R. 26 E., PMM, Sec. 6, lot 3	Upper Camp Creek	Phillips	40.11
T. 24 N., R. 26 E., PMM, Sec. 7, SWNE	Upper Camp Creek	Phillips	40
T. 24 N., R. 26 E., PMM, Sec. 8, E2SE	Upper Camp Creek	Phillips	80

Table 2-2 BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Table 2-2 BLM Lands in the Phase III Crow Boundary Settlement Act Exchange			
Legal Description- Principal Meridian Montana	Tract Identity	County	Acres
T. 24 N., R. 26 E., PMM, Sec. 20, SWSW	Lower Camp Creek	Phillips	40
T. 24 N., R. 26 E., PMM, Sec. 28, NWSE	Lower Camp Creek	Phillips	40
T. 24 N., R. 26 E., PMM, Sec. 29, W2NE, W2SW, NWSE	Lower Camp Creek	Phillips	200
T. 24 N., R. 26 E., PMM, Sec. 30, E2, NENW	Lower Camp Creek	Phillips	360
T. 24 N., R. 25 E., PMM, Sec. 8, SESE	Sand Hills	Phillips	40
T. 24 N., R. 25 E., PMM, Sec. 17, NENE, S2NE, NESW and SE	Sand Hills	Phillips	320
T. 24 N., R. 25 E., PMM, Sec. 20, NENE	Sand Hills	Phillips	40
T. 24 N., R. 25 E., PMM, Sec. 21, N2N2, SWNE, SENW	Sand Hills	Phillips	240
T. 37 N., R. 40 E., PMM, Sec. 4, SESW	Roanwood Valley	Valley	40
T. 37 N., R. 40 E., PMM, Sec. 9, W2NE, SENE, E2NW, SW	Roanwood Valley	Valley	360
T. 37 N., R. 41 E., PMM, Sec. 28, N2	Mosquito Creek	Valley	320
T. 37 N., R. 42 E., PMM, Sec. 21, NW, S2NE and E2SE	Kamanski Hill	Valley	320
T. 36 N., R. 42 E., PMM, Sec. 2, lot 4 and SWNW	West Fork Poplar River	Valley	78.75
T. 36 N., R. 42 E., PMM, Sec. 3, lot 1 and SENE	West Fork Poplar River	Valley	78.75
T. 37 N., R. 42 E., PMM, Sec. 35, E2SW and W2SE	Morgan Coulee	Valley	160
T. 36 N., R. 41 E., PMM, Sec. 10, SW and W2SE	Round Butte	Valley	240
T. 36 N., R. 41 E., PMM, Sec. 15, N2NW	Round Butte	Valley	80
T. 36 N., R. 42 E., PMM, Sec. 23, E2SE	Glentana East	Valley	80
T. 36 N., R. 42 E., PMM, Sec. 24, NENW S2NW and SW	Glentana East	Valley	280
T. 35 N., R. 42 E., PMM, Sec. 8, SE	Glentana South	Valley	160
T. 35 N., R. 42 E., PMM, Sec. 9, SWNE, S2NW ,W2SW	Glentana South	Valley	200
T. 34 N., R. 40 E., PMM, Sec. 11, S2	Middle Fork	Valley	320
T. 33 N., R. 39 E., PMM, Sec. 1, W2W2, SESW , SWSE	West Fork	Valley	240
T. 33 N., R. 39 E., PMM, Sec. 2, E2 and E2NW	West Fork	Valley	400
Subtotal—Malta Office			4,797.61
T. 21 N. R. 9 E., PMM, Sec. 8: SENE	Shonkin Creek	Chouteau	40
T. 13 N. R. 21 E., PMM, Sec. 15: NWSW	Surenough/Potter Divide	Fergus	40
T. 13 N. R. 21 E., PMM, Sec. 20: SENE, SE	Surenough/Potter Divide	Fergus	200
T. 13 N. R. 21 E., PMM, Sec. 21: SWNE, NENW, S2NW	Surenough/Potter Divide	Fergus	160
T. 13 N. R. 21 E., PMM, Sec. 28: NWNW	Surenough/Potter Divide	Fergus	40
T. 13 N. R. 21 E., PMM, Sec. 29: N2NE	Surenough/Potter Divide	Fergus	80
T. 20 N. R. 19 E., PMM, Sec. 8: W2W2, excl. lands west of RR	Dog Creek	Fergus	141.81
T. 20 N. R. 19 E., PMM, Sec. 9: SE, S2SW	Rose / Dog Creek Divide	Fergus	240
T. 20 N. R. 19 E., PMM, Sec. 15: N2	Rose Creek	Fergus	320
T. 21 N. R. 19 E., PMM, sec. 27: S2SW	Bloomfield Butte	Fergus	80
T. 21 N. R. 19 E., PMM, sec. 34: SW, E2NW	Bloomfield Butte	Fergus	240
T. 22 N. R. 18 E., PMM, sec. 13: NWNW	Whiskey Ridge West	Fergus	40
T. 22 N. R. 19 E., PMM, sec. 9: W2NE	Taffy Creek	Fergus	80
T. 22 N. R. 19 E., PMM, sec. 18: NWNW, S2NW, N2SW, SESW, W2SE	Flax Coulee	Fergus	310.96
T. 22 N. R. 19 E., PMM, sec. 19: NE, N2SE, SWSE, S2SW	Flax Coulee	Fergus	357.66
T. 22 N. R. 19 E., PMM, sec. 20: NENE, W2NW	Flax Coulee	Fergus	120
T. 22 N. R. 19 E., PMM, sec. 21: SW	Taffy Ridge	Fergus	160
T. 22 N. R. 20 E., PMM, sec. 3: S2S2, NESE	Two Calf Creek	Fergus	200
T. 22 N. R. 20 E., PMM, sec. 4: SESW	White Horse Butte	Fergus	40
T. 22 N. R. 20 E., PMM, sec. 10: N2NW, NWNE	Two Calf Creek	Fergus	120
T. 22 N. R. 20 E., PMM, sec. 15: NWNW	N. Fork Taffy Creek	Fergus	40
Subtotal—Lewistown Office			3,050.43
Total Acres			27,034.59

specific impacts on current State lessee's ranching operations. This alternative would evaluate various actions that might be taken by the Land Board to mitigate impacts to State lessees. These actions include the potential consideration of delayed implementation until the end of the current lease term to allow more time for a lessee to adjust operations; granting access easements to lessees before the exchange to ensure future access to other lands; making exchanges contingent on an equitable sharing of costs between parties if the exchange requires fencing (tribal resolution requires the non-Indian to fence to keep livestock from trespass on a tribal lease). Another mitigated exchange alternative that could be suggested and evaluated, but not enforced without Crow tribal concurrence, would be the continued granting of lessee preference for a transitional period of time. The lessee would have to pay more for the grazing lease, but would have some additional time to resolve loss of the lease. The final mitigated exchange alternative would allow State lessees to propose exchanges for less critical deeded lands owned by the lessee or for other deeded lands on the reservation (with Crow tribal approval, since the Tribe would ultimately be the recipient of the land). This would occur as a simultaneous, three-way exchange. The deeded private land offered in exchange would become tribal trust land, the State land would become private land, and the BLM land would become State trust land, as would normally occur in this exchange process.

One private three-way exchange has been proposed between a State lessee and the Crow Tribe. It involves two parcels of State land (Pryor Creek and Broken Leg Creek) that would be retained by the State lessee. The lessee will provide the value of these lands in a trust or escrow account that will be disbursed upon closing to partially purchase lands selected by the Crow Tribe south of Hardin. This private parcel is located below the Big Horn Canal, has 127.7 cultivated and irrigated acres, and has a sale value of \$156,500.00. Figure 4-1, in Chapter 4, shows the location of the Big Horn Canal parcel and the legal description is included in Appendix A. The Crow Tribe will pay any residual cost necessary to acquire the parcel and the lessee and Tribe will split the closing costs and realty fees incurred to acquire the private parcel. The State will still acquire selected BLM lands equal in value to the State parcels being

exchanged. If all requirements for this three-way exchange are met in a way that satisfies each of the involved parties and is acceptable to the Land Board, then this alternative exchange will be incorporated into the joint Record of Decision/Decision Record issued by the State and BLM at the conclusion of the MEPA/NEPA process.

Another three-way exchange alternative that would allow the State lessee to acquire the Pryor Creek and Broken Leg Creek parcels involve lands already purchased by the Crow Tribe. In January 2000, the Tribe acquired 11,725.93 acres, more or less, in Big Horn and Yellowstone counties, Montana by purchasing a property known as the Veenhuis Ranch. This was done in preparation for the CBSA Phase IV exchange, which involves the private (non-State land) exchange described earlier in the Introduction and Proposed Action and Alternatives sections of the environmental assessment. The Veenhuis Ranch appraised at \$1,930,000. The value of the 11,511 acres of State land no longer owned by the State is approximately \$1,600,000. Thus, the Tribe has about \$300,000 more invested in the Veenhuis Ranch than will be covered by the private exchange program in Phase IV. The lessee can deposit in an escrow or trust account the amount of the appraised value of the affected State land for payment at closing to the Crow Tribe for a portion of the Veenhuis Ranch. This would relieve the Crow Tribe of some of the extra financial obligations it has incurred through purchase of the Veenhuis Ranch. If this alternative was used, the following simultaneous transactions would occur: 1) the State lessee would get a deed to the affected State land, 2) a portion of the Veenhuis Ranch equaling the value of the State land would be deeded to the federal government, and 3) the funds on deposit by the State lessee would be transferred to the Crow Tribe. Figure 4-2 in Chapter 4 shows the location of the Veenhuis Ranch and the legal description for the lands involved are in Appendix A. Most of the remainder of the Veenhuis Ranch would be acquired in Phase IV of the Crow Boundary Settlement Act Land Exchange Project, releasing the Crow Tribe from most financial obligations resulting from purchase of the property.

2.2.3 Selection of other BLM Lands

Another alternative would be to select other lands within the respective boundaries of the BLM Field Offices. Prior to the selection of lands contained in the proposed action, BLM and DNRC staff met on several occasions in order to develop a list of lands that would be suitable for continued study for disposal and acquisition. DNRC felt the lands studied under this environmental assessment would best contain the elements necessary to obtain the approval of the State Land Board under its land exchange policy.

Fulfillment of the requirements of the CBSA requires the State's voluntary participation, as federal legislation cannot mandate the disposal of State properties without the consent of the State of Montana. Therefore, only the BLM lands DNRC is willing to accept are being considered. This assessment will only discuss the impacts of disposal and acquisition of the present list of selected lands. This alternative, therefore, will not be analyzed further.

2.2.4 Other Alternatives Considered but Not Carried Forward

An alternative way of accomplishing compensation for the Crow Tribe is to provide money equivalent in value to the value of the State lands and then allow the Tribe to use that money to purchase private fee lands inside the reservation and convert them to tribal trust lands. This alternative would require either amending the CBSA or new legislation that would have Congress appropriate the necessary funds. This alternative was discussed as an option at the November 1995 Land Board meeting. The Crow Tribe did not support opening the CBSA to amendment or new legislation to provide funds for purchasing private lands. The Tribe expressed a specific interest in a return of the State lands, which were Tribal trust lands prior to the passage of the 1920 Crow Allotment Act and subsequent selection of lands by the State. Without tribal support for new federal legislation, this option was not feasible and the Land Board directed DNRC to proceed with exchanges under the CBSA.

Figure 2-1 State Lands In the CBSA Phase III Exchange

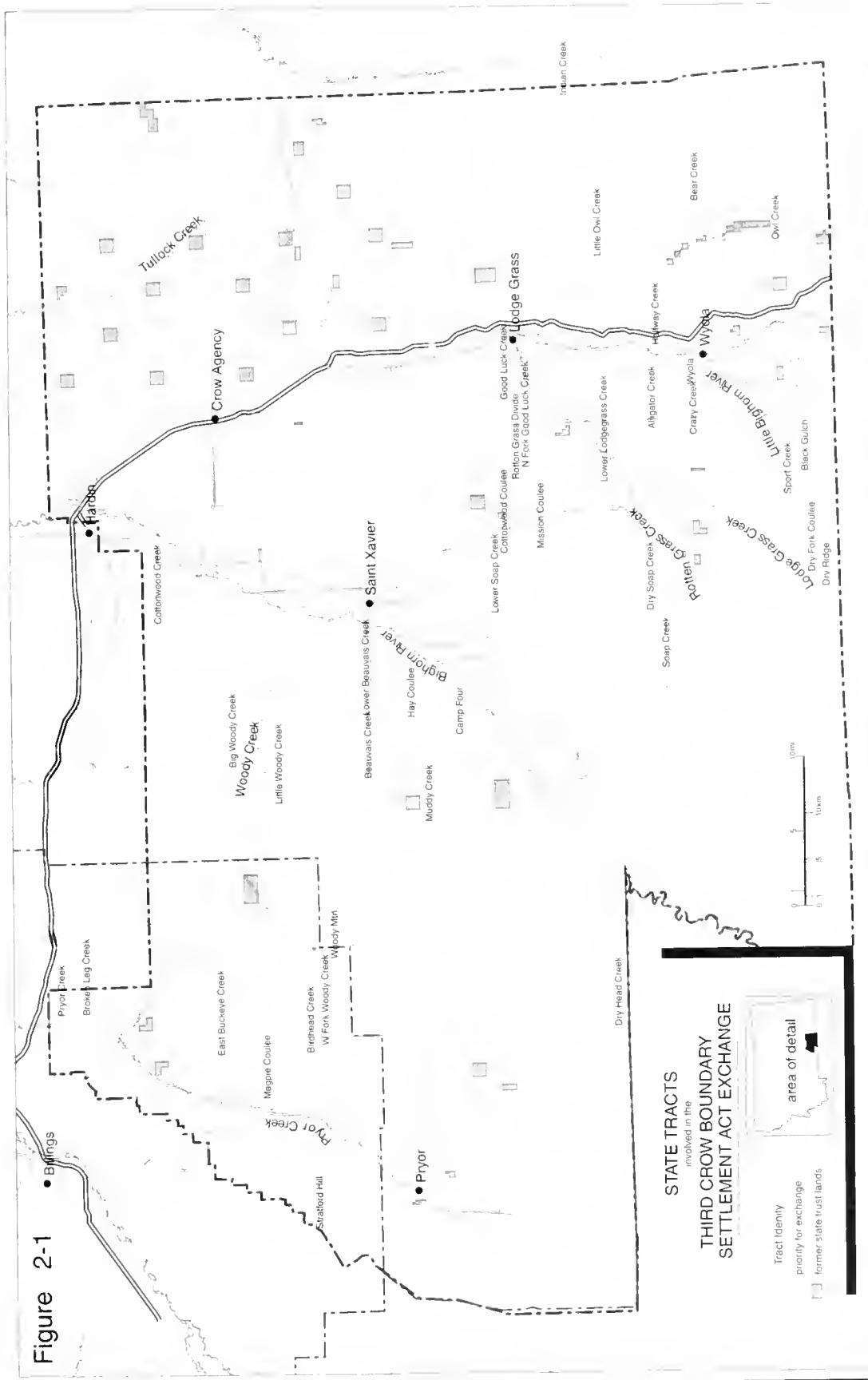


Figure 2-2 BLM Lands in the CBSA Phase III Exchange

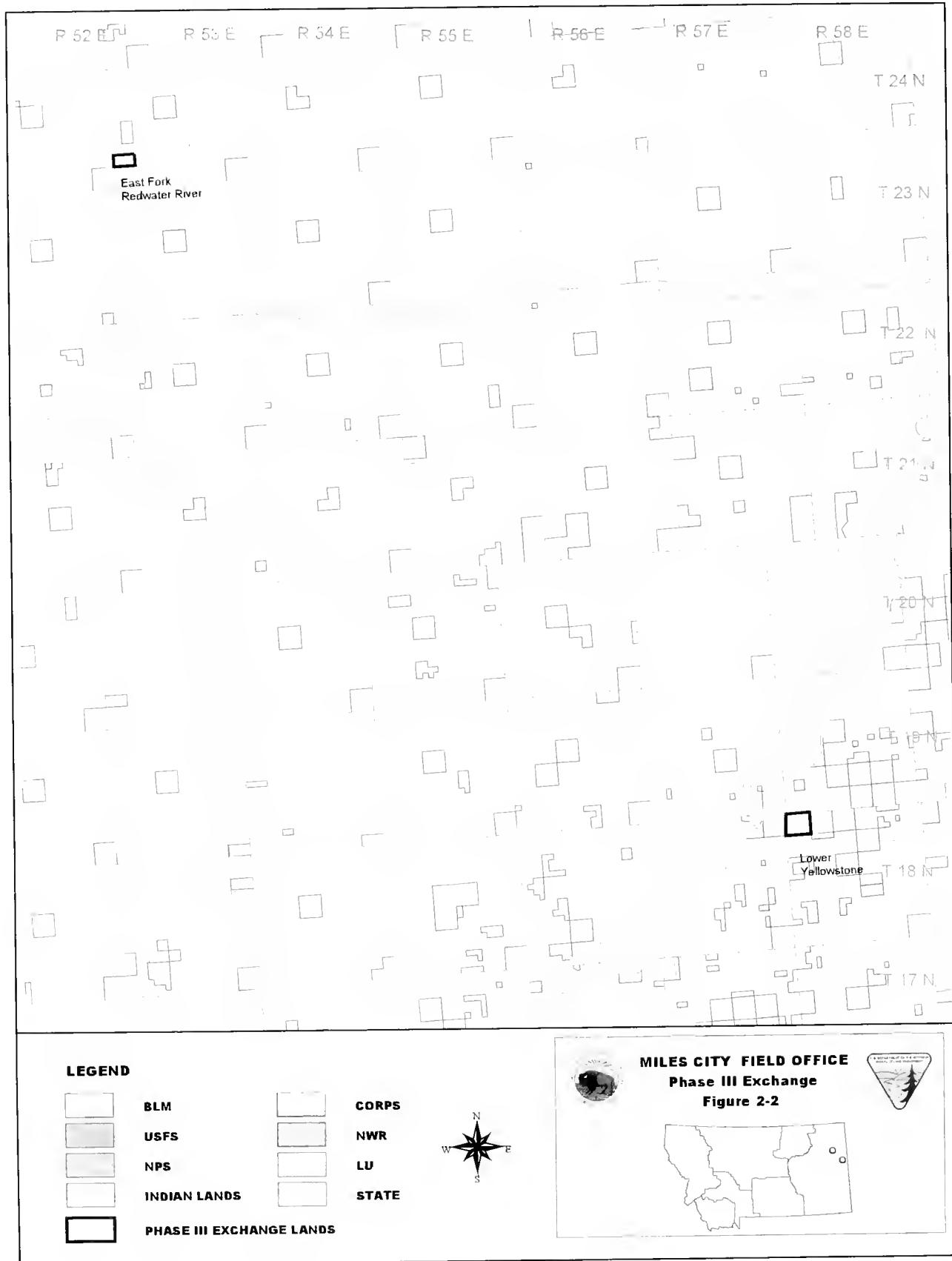


Figure 2-3 BLM Lands in the CBSA Phase III Exchange

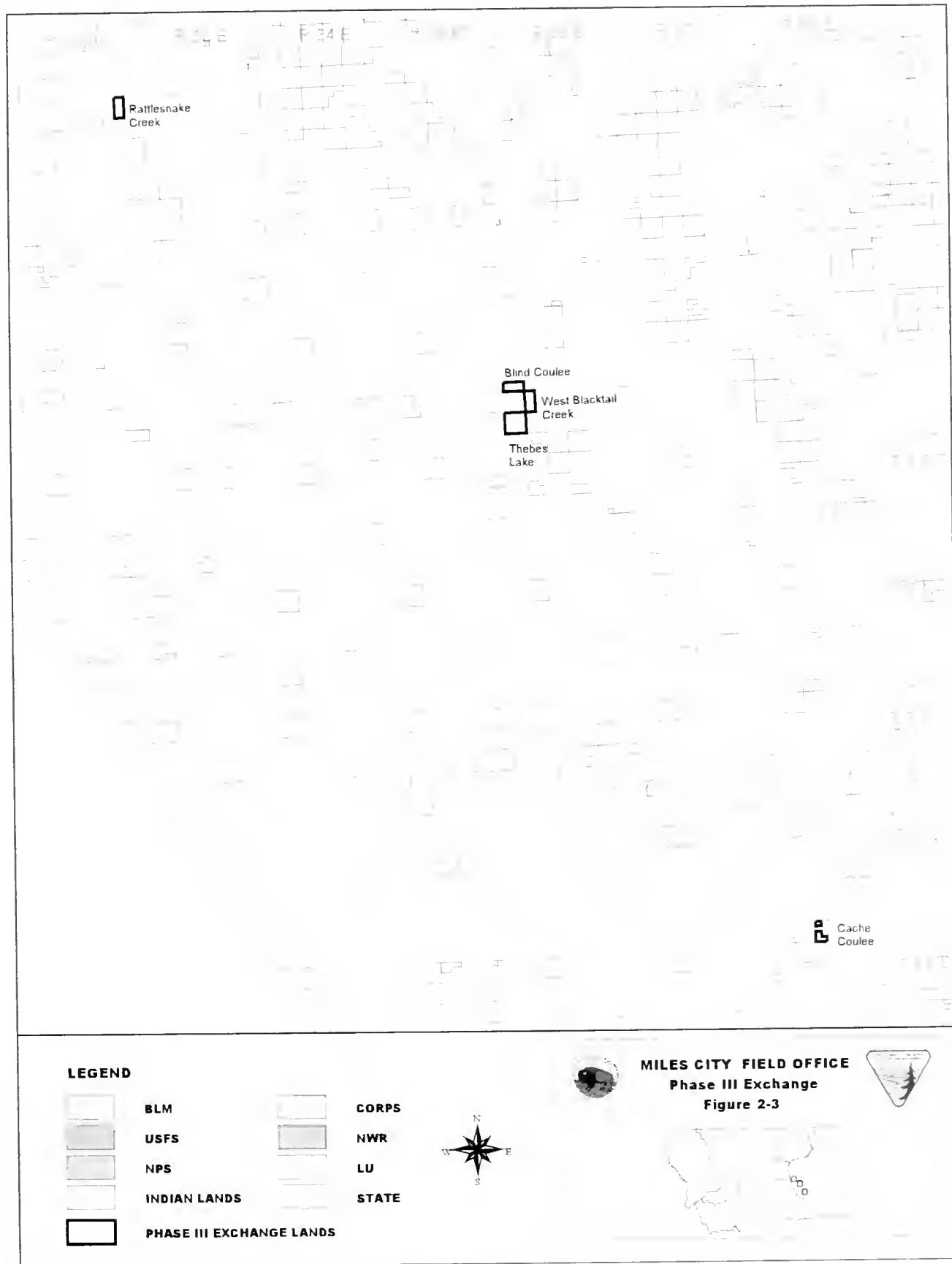


Figure 2-4 BLM Lands in the CBSA Phase III Exchange

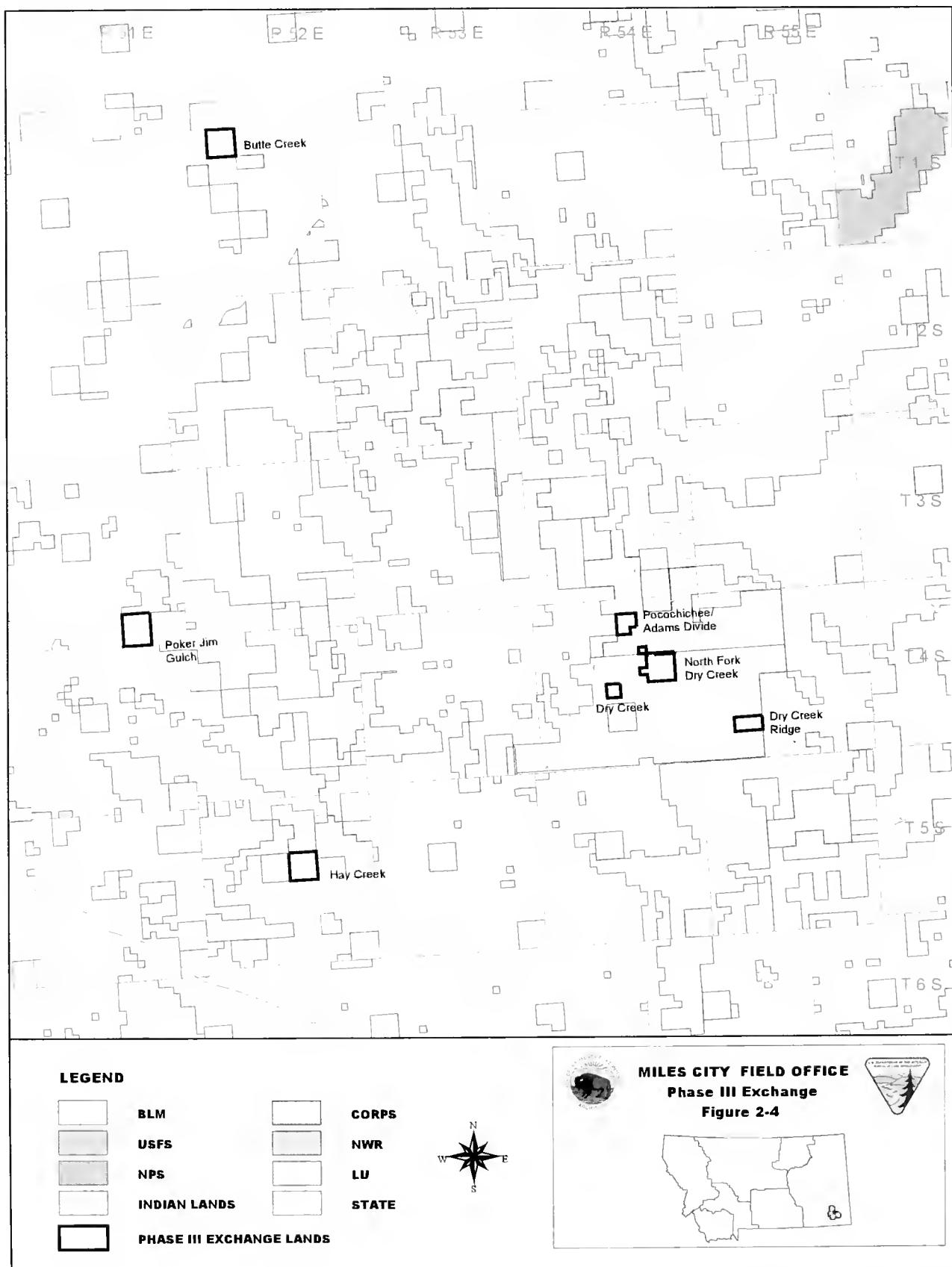


Figure 2-5 BLM Lands in the CBSA Phase III Exchange

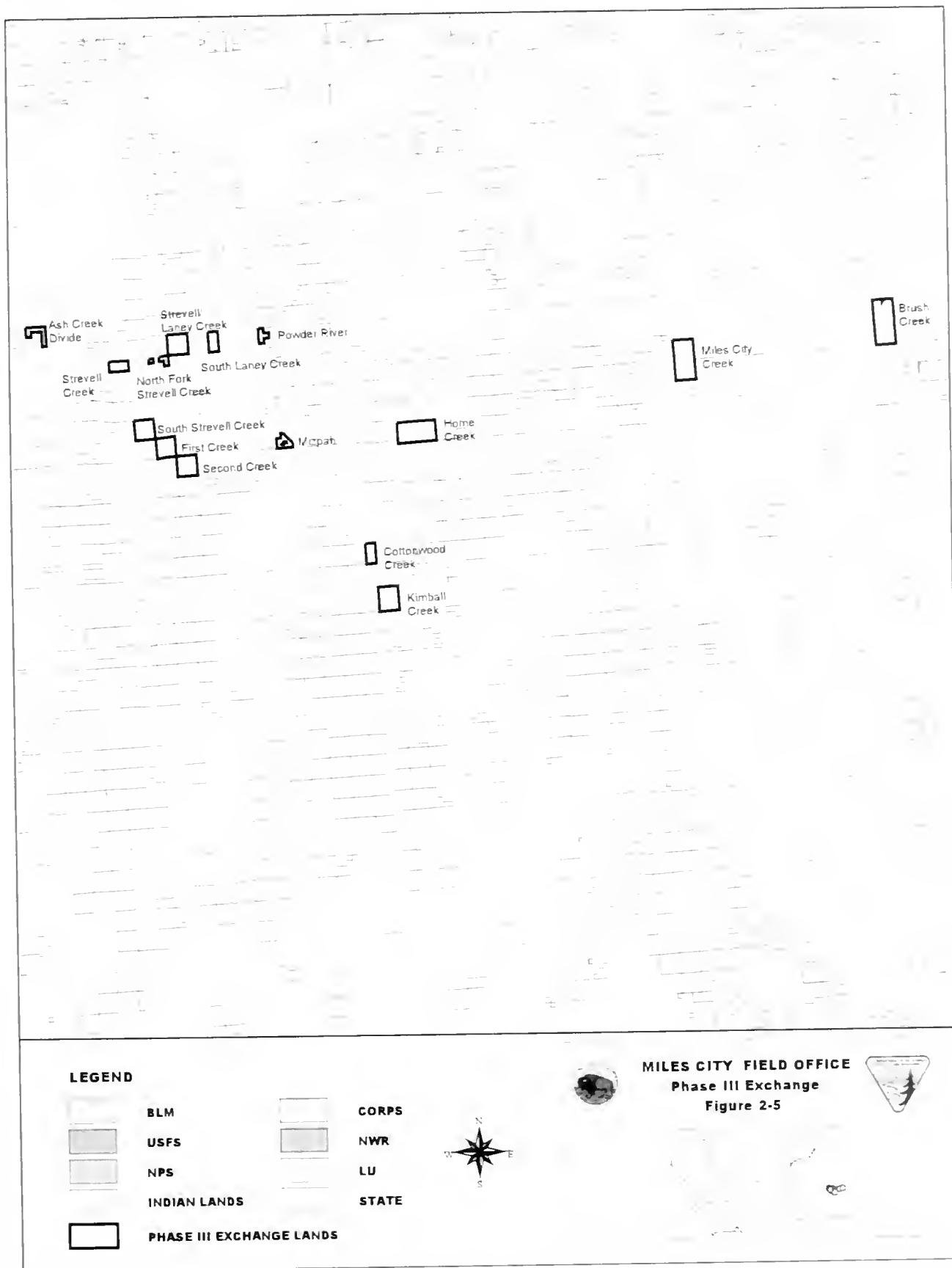


Figure 2-6 BLM Lands in the CBSA Phase III Exchange

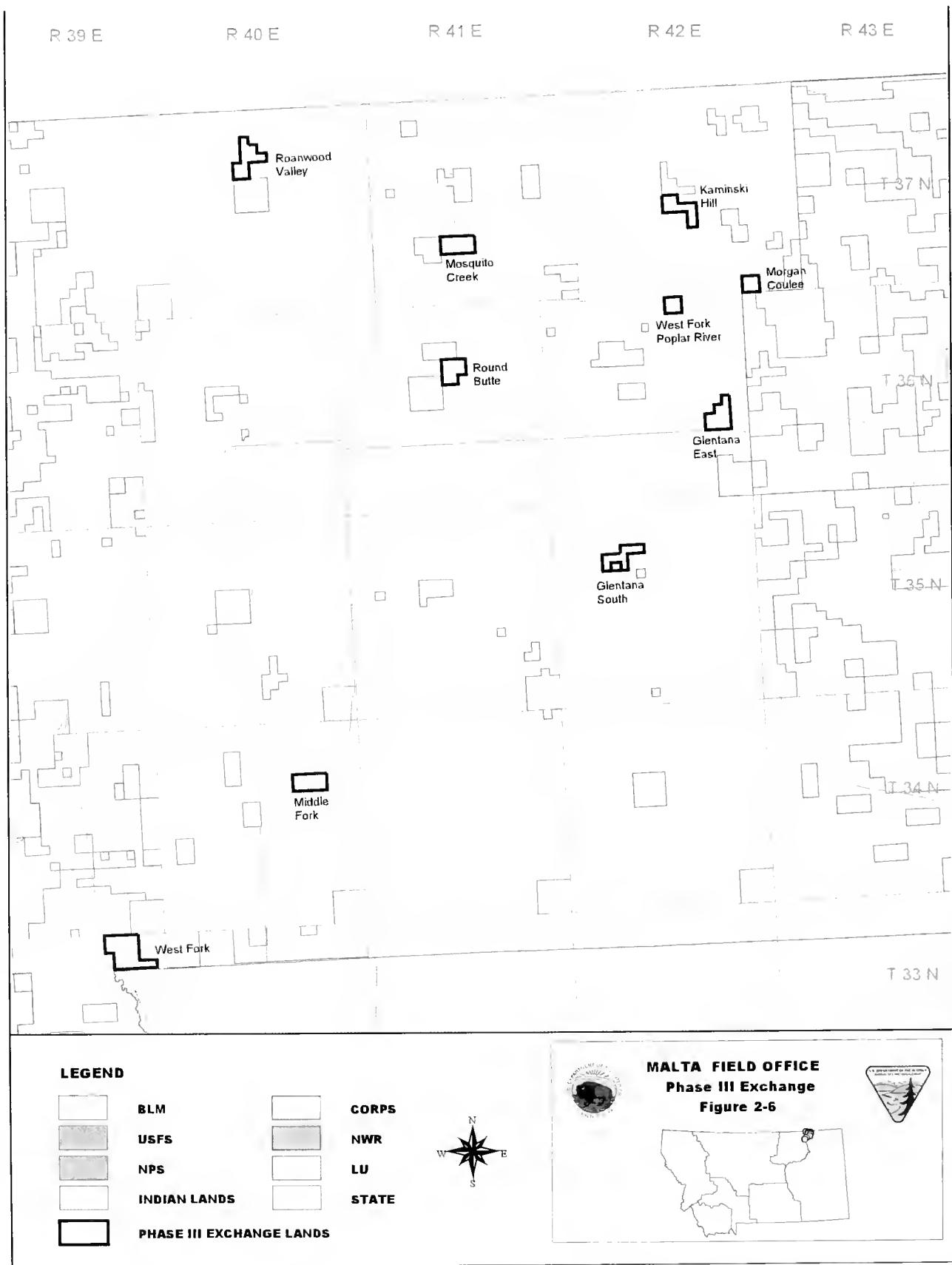


Figure 2-7 BLM Lands in the CBSA Phase III Exchange

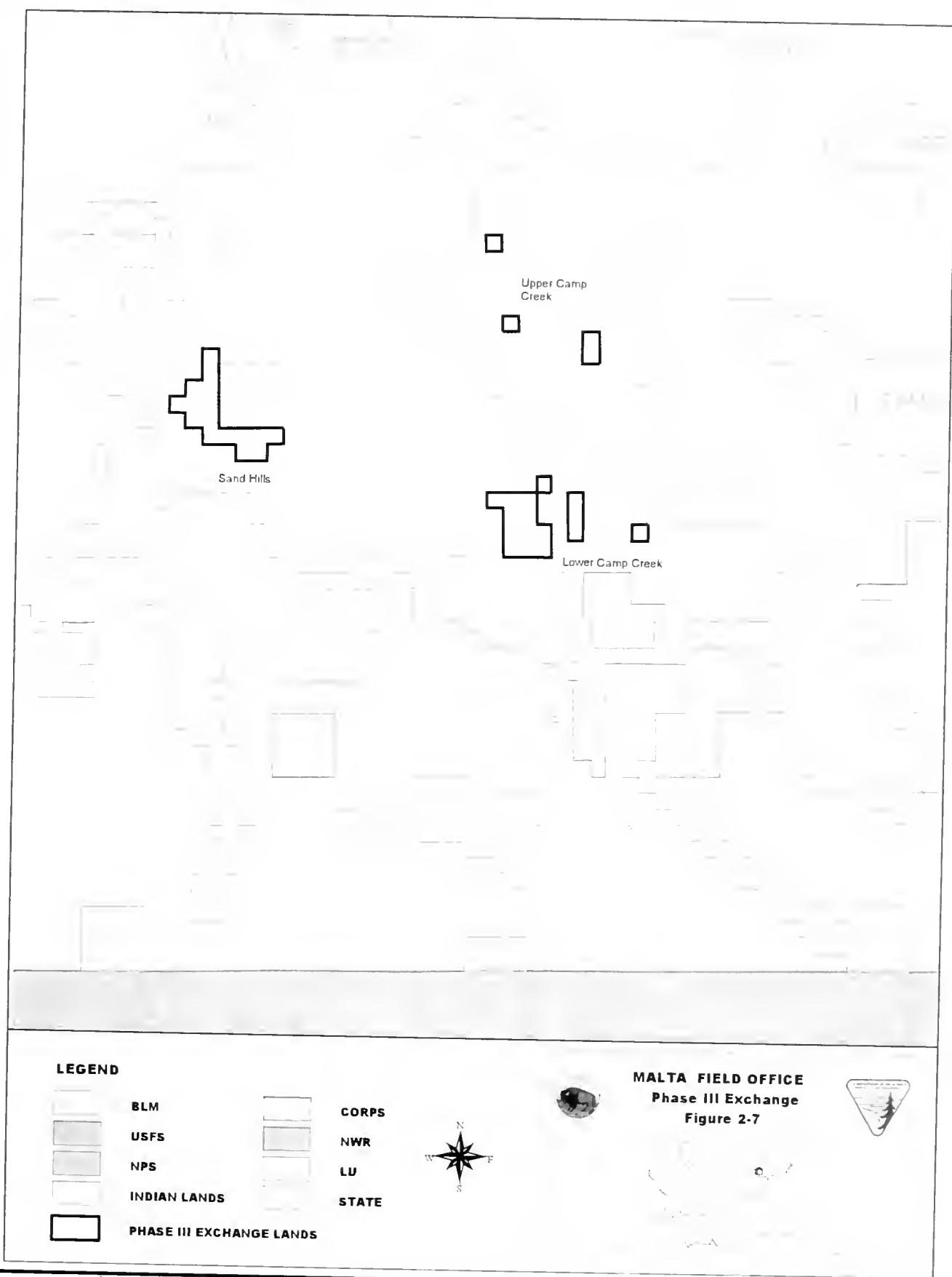


Figure 2-8 BLM Lands in the CBSA Phase III Exchange

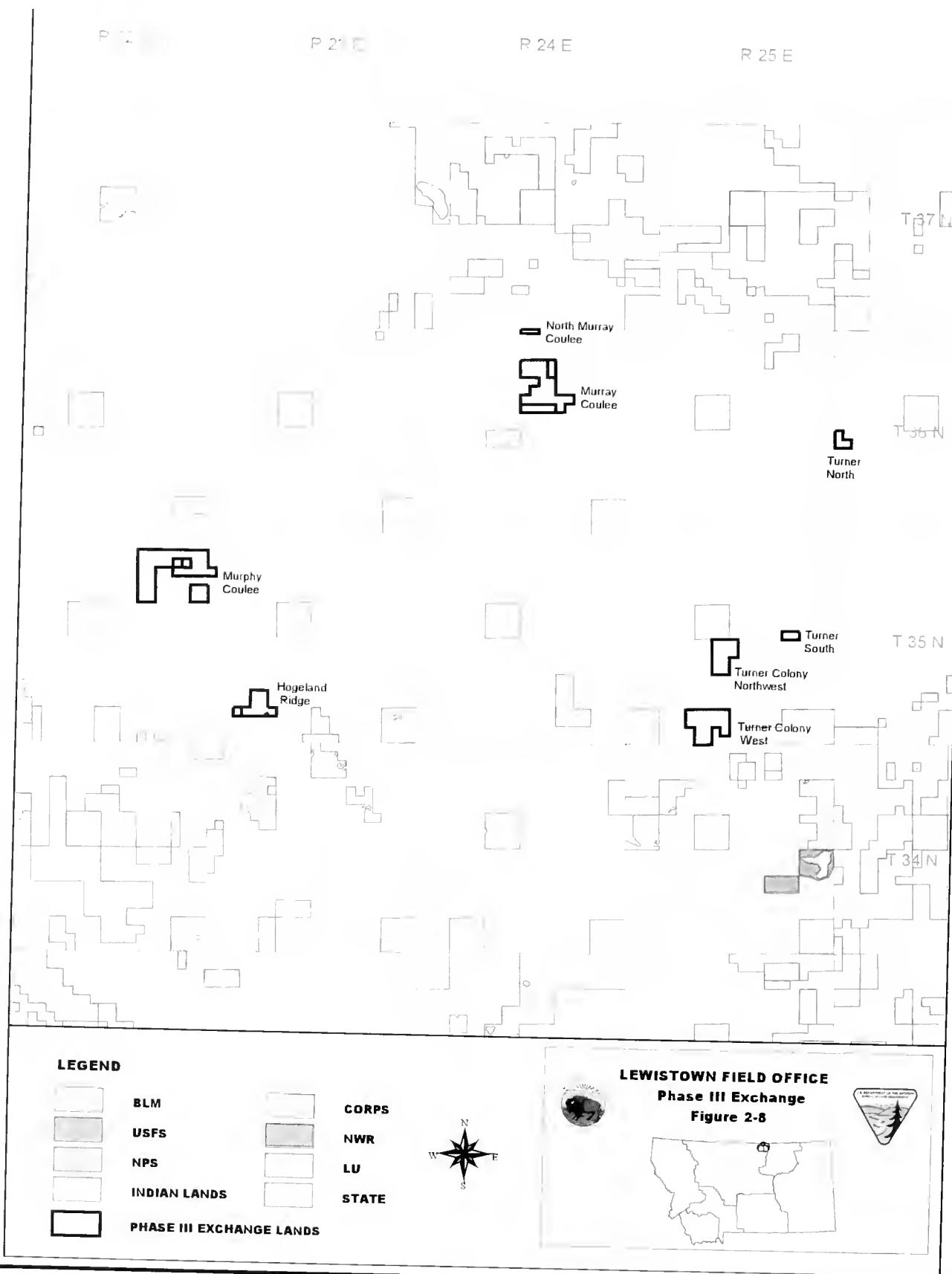


Figure 2-9 BLM Lands in the CBSA Phase III Exchange

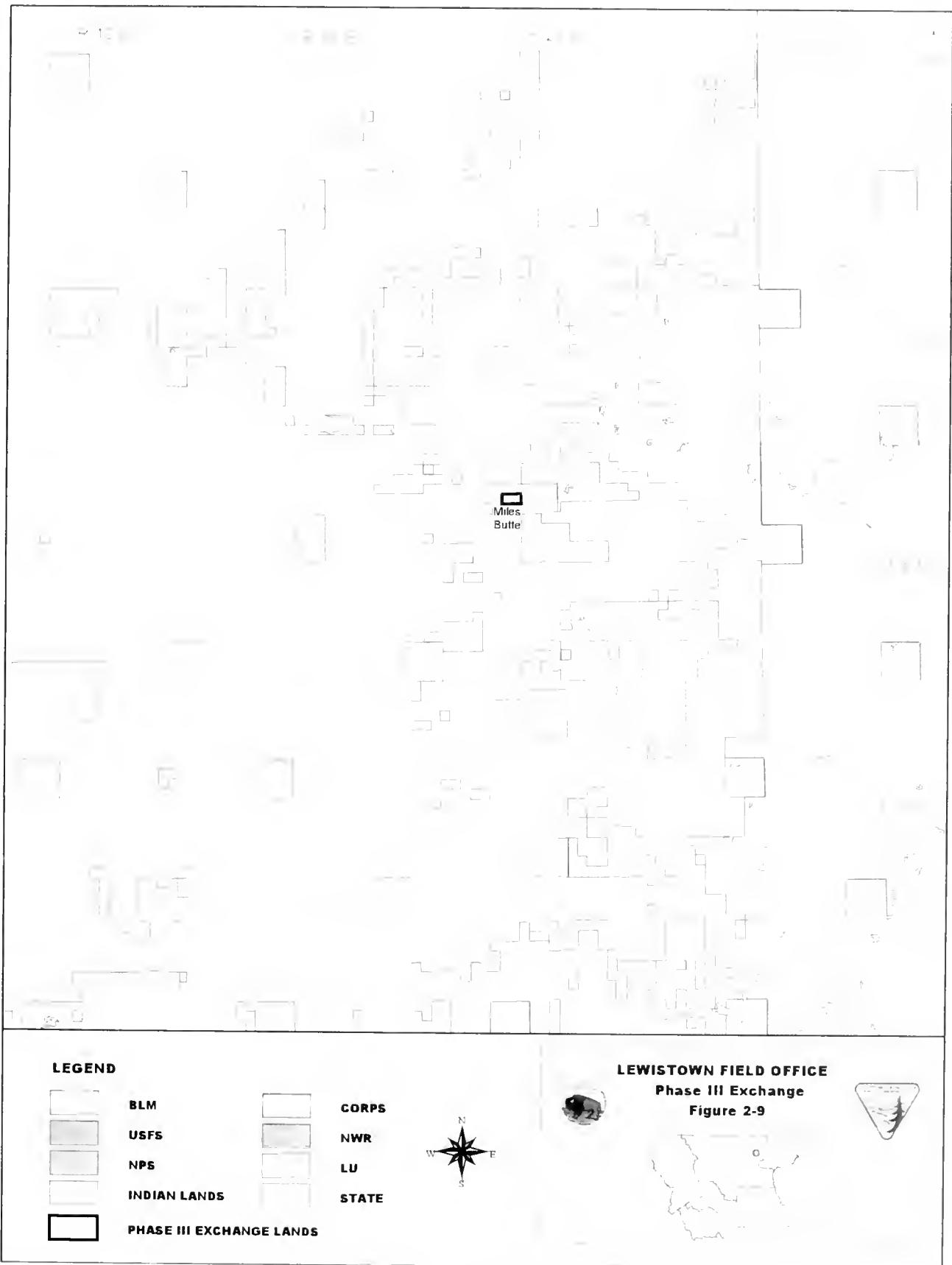


Figure 2-10 BLM Lands in the CBSA Phase III Exchange

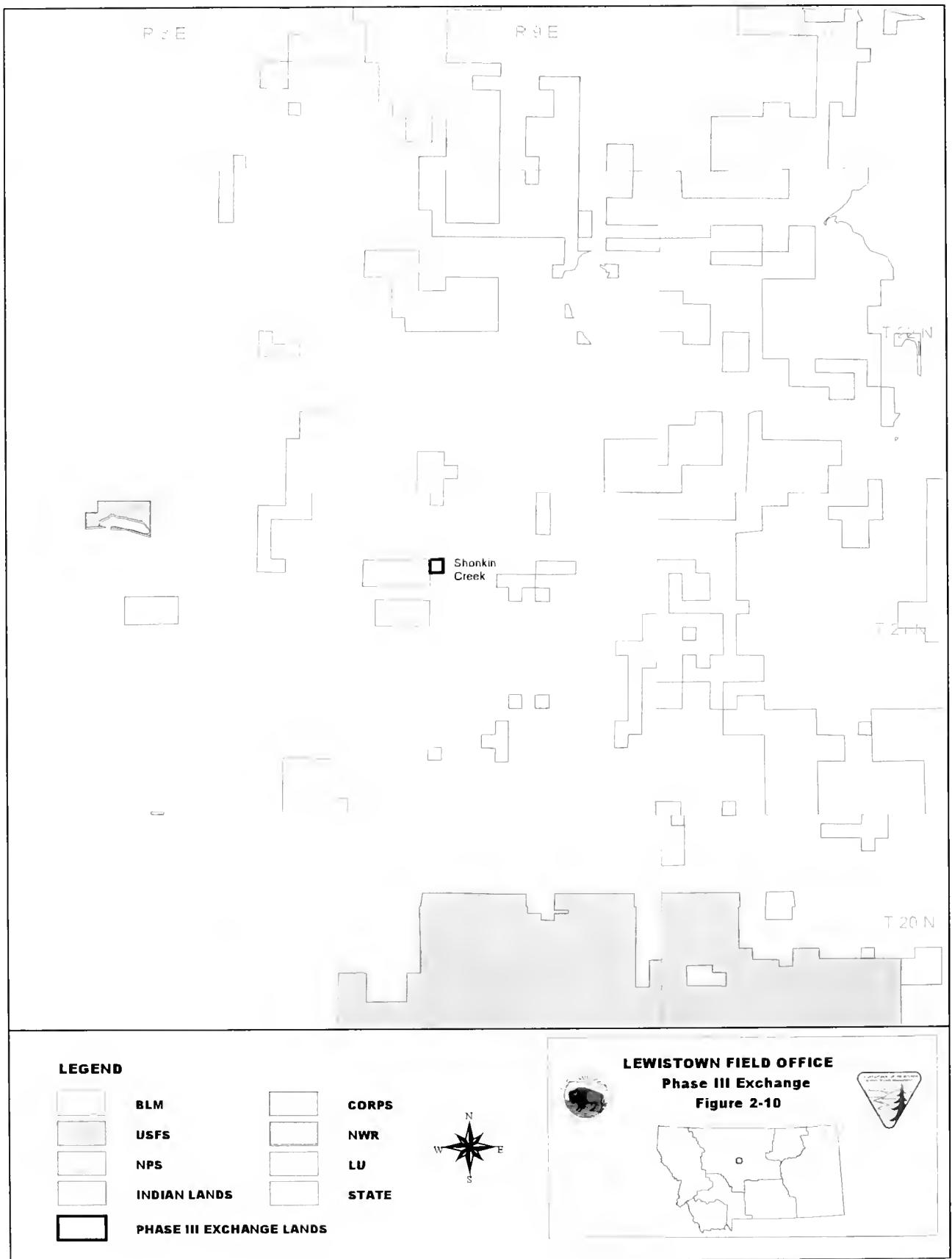


Figure 2-11 BLM Lands in the CBSA Phase III Exchange

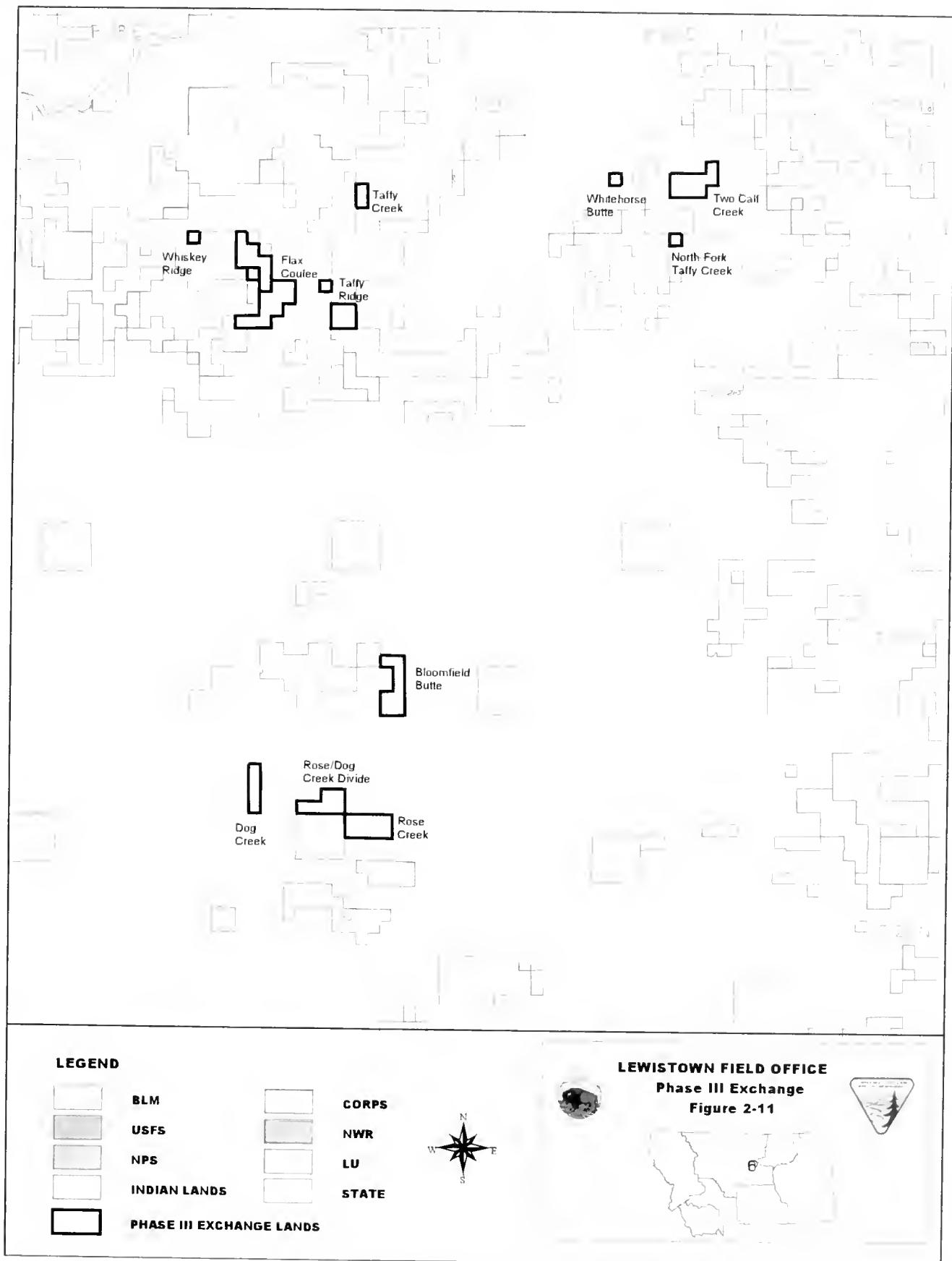
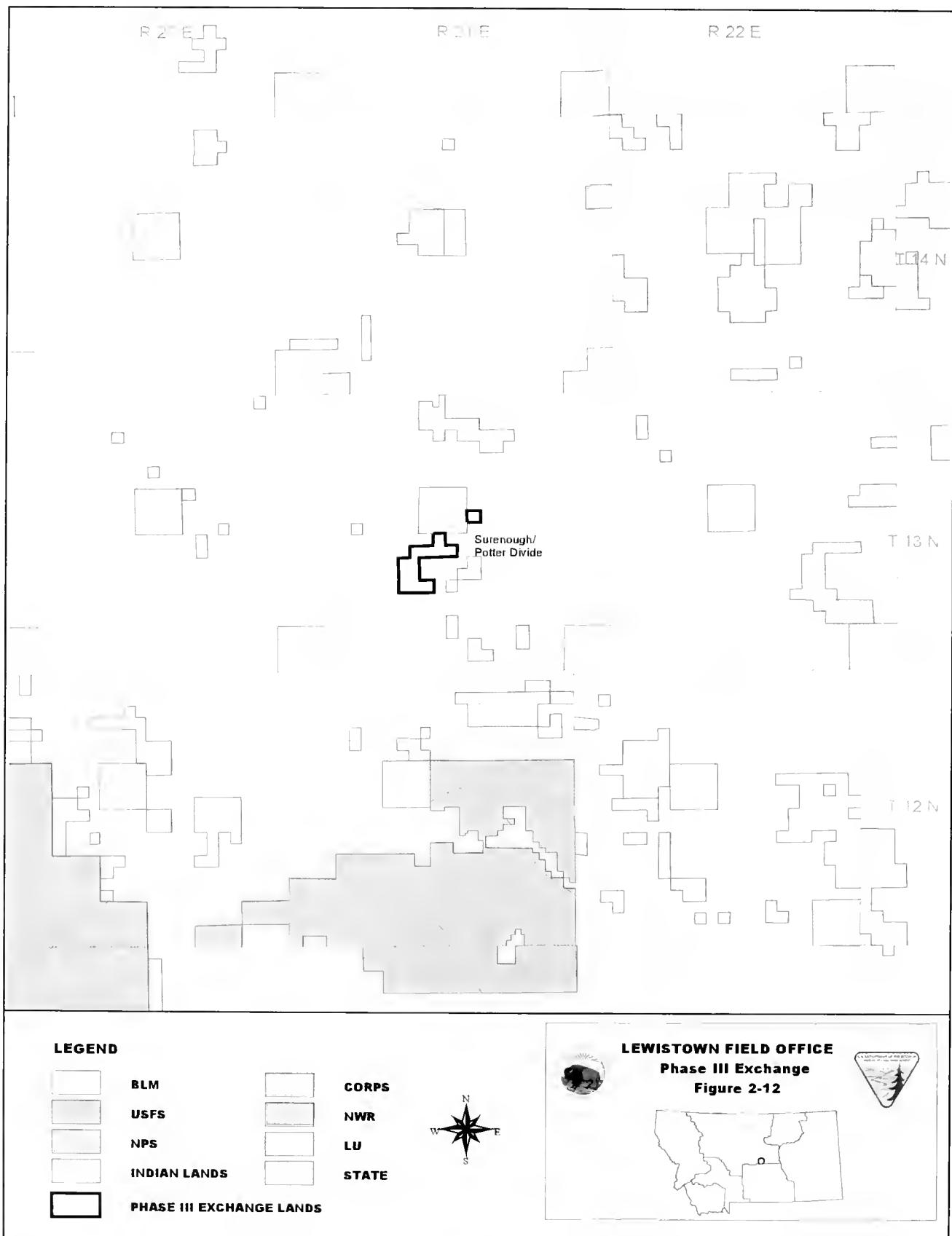


Figure 2-12 BLM Lands in the CBSA Phase III Exchange



3.0 AFFECTED ENVIRONMENT

This chapter describes the portions of the physical, biological, social and economic environments that would affect or might be affected by the implementation of any of the alternatives for the proposed exchange. This chapter presents the existing conditions as a baseline for the analysis of potential impacts that are examined in Chapter 4. Chapter 3 includes a description of conditions for those BLM tracts in Appendix B which had not previously been specifically identified for disposal in the West HiLine and Judith-Valley-Phillips Resource Management Plans.

3.1 BLM Lands

3.1.1 General Geography, Topography and Aesthetics

The BLM lands in the Phase III exchange fall within a variety of diverse landscapes. Table 3-1 summarizes some of these diverse characteristics of the BLM tracts and allows for a general comparison between the lands.

Table 3-1 General Geography, Topography and Aesthetics of BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Landscape Position ⁵	Topography ⁶	View ⁷	Scenery ⁸
Cache Coulee	Rosebud	Intermediate	Rolling	Wide	Prairie
Thebes Lake	Rosebud	Intermediate	Badlands	Wide	Sage
Blind Coulee	Rosebud	Intermediate	Badlands	Wide	Sage
West Blacktail Creek	Rosebud	Intermediate	Badlands	Wide	Sage
Rattlesnake Creek	Rosebud	Intermediate	Broken	Wide	Sage
Hay Creek	Powder River	Intermediate	Rolling	Wide	Prairie
Poker Jim Gulch	Powder River	Intermediate	Broken	Wide	Sage
Butte Creek	Powder River	Intermediate	Broken	Wide	Prairie
Kimball Creek	Custer	Intermediate	Dissected	Expansive	Sage
Cottonwood Creek	Custer	Intermediate	Dissected	Wide	Sage
Strevell Creek	Custer	Intermediate	Badlands	Expansive	Sage
South Strevell Creek	Custer	Intermediate	Badlands	Wide	Sage
N. Fork Strevell Creek	Custer	Intermediate	Badlands	Open	Sage
First Creek	Custer	Intermediate	Dissected	Wide	Sage
Second Creek	Custer	Intermediate	Dissected	Wide	Sage
Mizpah	Custer	Intermediate	Broken	Open	Sage
Home Creek	Custer	Intermediate	Dissected	Wide	Sage
Ash Creek Divide	Custer	Upland	Dissected	Open	Mixed
Strevell/Laney Divide	Custer	Upland	Badlands	Expansive	Mixed
South Laney Creek	Custer	Intermediate	Rolling	Wide	Prairie
Powder River	Custer	Lowland	Flat	Narrow	Mixed
Pocochichee /Adams Divide	Carter	Intermediate	Rolling	Expansive	Prairie
N. Fork Dry Creek	Carter	Intermediate	Rolling	Wide	Prairie
Dry Creek	Carter	Intermediate	Rolling	Wide	Prairie
Dry Creek Ridge	Carter	Upland	Broken	Expansive	Prairie
Miles City Creek	Fallon	Upland	Broken	Wide	Prairie
Brush Creek	Fallon	Intermediate	Dissected	Wide	Mixed
Lower Yellowstone	Wibaux	Intermediate	Badlands	Wide	Sage
E. Fork Redwater River	Richland	Intermediate	Dissected	Wide	Prairie
Miles Butte	Blaine	Intermediate	Rolling	Wide	Prairie
Murphy Coulee	Blaine	Upland	Rolling	Wide	Prairie
Hogeland Ridge	Blaine	Upland	Rolling	Wide	Prairie
Turner South	Blaine	Upland	Flat	Wide	Prairie
Turner Colony Northwest	Blaine	Upland	Flat	Wide	Prairie
Turner Colony West	Blaine	Upland	Flat	Wide	Prairie
North Murray Coulee	Blaine	Upland	Rolling	Wide	Prairie
Murray Coulee	Blaine	Upland	Rolling	Wide	Prairie
Turner North	Blaine	Upland	Flat	Wide	Prairie
Upper Camp Creek	Phillips	Intermediate	Broken	Wide	Mixed
Lower Camp Creek	Phillips	Intermediate	Rolling	Wide	Sage
Sand Hills	Phillips	Intermediate	Dissected	Expansive	Mixed
Roanwood Valley	Valley	Upland	Broken	Wide	Prairie

⁵ Landscape position is described in broad terms relative to major drainages (Yellowstone, Musselshell, Powder rivers, e.g.) and intervening divides. This characteristic is divided into Lowland (floodplain or terraces near the primary drainage), Intermediate (lands between Lowland and Upland), and Upland.

⁶ Topography is divided into categories of increasing drainage density and roughness of terrain using descriptive terms like Flat, Rolling, Broken, Dissected, and Badland

⁷ If views are typically 10-20 miles, they are termed Expansive; 5-10 miles, Wide; 1-5 miles, Open; less than a mile, Narrow; and less than 200 yards, Closed.

⁸ Scenery depicts the typical vegetation at this site. Sage denotes sagebrush and grass mixed, Prairie denotes mostly grassland, Mixed means mixed scattered trees, grass and/or sagebrush, and Timber denotes most views are of timber stands.

**Table 3-1 General Geography, Topography and Aesthetics of BLM Lands in the Phase III
Crow Boundary Settlement Act Exchange**

Tract Identity	County	Landscape Position ⁵	Topography ⁶	View ⁷	Scenery ⁸
Mosquito Creek	Valley	Lowland	Flat	Wide	Prairie
Kamanski Hill	Valley	Intermediate	Broken	Wide	Prairie
West Fork Poplar River	Valley	Lowland	Flat	Wide	Prairie
Morgan Coulee	Valley	Intermediate	Rolling	Wide	Prairie
Round Butte	Valley	Intermediate	Broken	Wide	Prairie
Glentana East	Valley	Intermediate	Rolling	Wide	Prairie
Glentana South	Valley	Upland	Rolling	Open	Prairie
Middle Fork	Valley	Lowland	Flat	Open	Prairie
West Fork	Valley	Intermediate	Rolling	Wide	Prairie
Shonkin Creek	Chouteau	Intermediate	Broken	Wide	Prairie
Surenough/Potter Divide	Fergus	Intermediate	Dissected	Closed	Timber
Dog Creek	Fergus	Lowland	Flat	Wide	Sage
Rose / Dog Creek Divide	Fergus	Intermediate	Rolling	Wide	Sage
Rose Creek	Fergus	Intermediate	Rolling	Wide	Prairie
Bloomfield Butte	Fergus	Intermediate	Rolling	Wide	Prairie
Whiskey Ridge West	Fergus	Intermediate	Broken	Open	Mixed
Taffy Creek	Fergus	Intermediate	Broken	Wide	Prairie
Flax Coulee	Fergus	Intermediate	Broken	Wide	Mixed
Taffy Ridge	Fergus	Intermediate	Broken	Wide	Prairie
Two Calf Creek	Fergus	Intermediate	Broken	Wide	Sage
White Horse Butte	Fergus	Intermediate	Broken	Wide	Sage
N. Fork Taffy Creek	Fergus	Intermediate	Broken	Wide	Sage

3.1.2 Climate

The climate on the BLM lands is semiarid and continental, with cold winters and warm to hot summers. Climatic information on the parcels can be inferred from climatic data collected in nearby cities. Table 3-2 provides climatic summary information for these cities.

The data suggest that temperatures are slightly cooler and precipitation is slightly less the farther east and north the data are collected. Generally the higher the elevation, the cooler and wetter the climate will be. However, for purposes of this environmental assessment, the BLM lands may be considered to have essentially the same climatic characteristics as the nearest cities depicted in Table 3-2.

Most of the summer precipitation occurs in showers or thunderstorms, with occasional steady rains during late spring or early summer. June is the month of highest precipitation at all selected stations and February is the month of lowest precipitation. Precipitation generally falls as snow during late fall, winter, and early spring, although rain can occur in any month. Late spring, summer, and early fall precipitation is almost always rain, but hail is observed frequently during summer thunderstorms. Although precipitation is not plentiful, it mainly occurs during the growing season and is conducive to the growth of herbaceous rangeland species and some deciduous and evergreen trees on the BLM lands.

Table 3-2 Selected Climatic Data Summary

Table 3-2 Selected Climatic Data Summary					
Characteristic	Winifred	Harlem	Broadus	Miles City	Opheim
January Avg. Temp. (Max./Min. in °F.)	28.8/5.5	24.8/0.7	31.2/5.3	26.5/6.0	17.2/-4.2
July Avg. Temp. (Max./Min. in °F.)	84.0/51.3	85.6/52.3	86.8/55.5	88.5/59.9	80.4/50.1
Avg. Total Precipitation (in.)	15.01	11.74	13.52	13.48	11.71

3.1.3 Groundwater, Geology and Mineral Potential

The BLM lands are underlain by one or more of four general aquifer types, or by formations not generally considered aquifers. The four general types of aquifers are surficial deposits, and aquifers in Cenezoic, Mesozoic, and Paleozoic rocks.⁹ Surficial deposits include alluvium, fluvial-glacial gravels, terrace gravels, and Flaxville Formation gravels or equivalents (Tertiary sand and gravel). Table 3-3 summarizes the geology, groundwater and mineral potential of the BLM lands.

The Fort Union Formation is the only significant Cenezoic aquifer involved in the CBSA exchange lands. The Fort Union Formation is mapped as the Tongue River, Lebo and Tullock members, from youngest to oldest. The Tullock and Tongue River members are important regional aquifers, particularly where thicker sandstone and coal beds are present. In areas where coal beds have burned underground the overlying beds are baked into brittle, fractured zones referred to locally as "clinker" or "scoria." These zones are fairly permeable and because they do not erode easily, protect areas from erosion, resulting in hills. Scoria zones are locally important aquifers because they permit infiltration of precipitation and have permeable zones that readily transmit groundwater. Springs with generally

good quality water occur in discharge zones along the edges of larger scoria deposits.

The Fort Union Formation thins along the edges, where older, Mesozoic rocks are exposed. Mesozoic aquifers important to the BLM lands in this exchange include, from youngest to oldest, the Hell Creek (also locally called Lance) Formation, the Fox Hills Sandstone, the Judith River Formation, and the Eagle Formation. Generally water in these aquifers is confined or "artesian" and water quality is highly variable, generally being best close to recharge zones where the formation is exposed.

The only significant Paleozoic aquifer involving the exchange lands is the massive limestone Madison Group aquifer, which is exposed in the Little Belt and Big Snowy mountains (a recharge zone) and underlies all of eastern Montana at considerable depth.

In addition to the geology listed in Table 3-3, BLM lands in Valley, Blaine, and Richland counties have a veneer of glacial deposits left by continental glaciation, which generally obscure the underlying bedrock geology.

The mineral estate for the BLM lands will be retained by BLM and will not be exchanged because the State does not own minerals on its lands within the Crow

⁹ Montana Ground Water Atlas, (1998) Montana State Library, Natural Resource Information System.

Reservation. With the exception of a small gravel pit on the Shonkin Creek parcel in Chouteau County, no mineral or material extraction has occurred. A recent review revealed no mining claims on the BLM tracts. A mineral report compiled by the BLM for this exchange is included in Appendix C. The mineral report concludes:

The conveyance lands contain the potential for the occurrence of oil, gas, coal, and mineral materials resources. Development potential for oil and gas ranges from low to high. Moderate to high oil and gas development potential exists on tracts located in northern Fergus, Richland, Wibaux, western Rosebud, Fallon, Custer, Carter, and Powder River Counties. There are no producing wells or leases on the tracts. Coal of high development potential occurs within the Pine Hills field on the tract located in Custer County in T. 7 N., R. 50 E.. The coal is not likely to be developed within the foreseeable future. There is no leasable mineral production on any of the subject tracts.

Mineral materials resources are abundant throughout the region and have the potential for occurrence on the tracts. There are no known pits or permits on any of the subject tracts and development potential is unknown. Development of any mineral material resources on the tracts would be demand-driven and permitting is discretionary. There are no areas of high demand on any of the tracts for mineral materials at the present time. Mineral materials ownership would remain with the United States and permitting could continue with coordination with the State of Montana as the surface owner.

There are no geologic or mineral-related reasons which would preclude the conveyance of surface rights of the subject lands out of federal ownership. The proposed conveyance would not interfere with operations under the Mineral Leasing Act.

Table 3-3 Groundwater, Geology and Mineral Potential of BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Geologic Formation ¹⁰	Groundwater Potential ¹¹	Water Quality ¹²	Mineral Potential ¹³
Cache Coulee	Rosebud	Lance Fm. and Bearpaw Shale	15-25gpm; ME 100	500-5000 mg/L	NA
Thebes Lake	Rosebud	Bearpaw Shale	Not an aquifer	NA	NA
Blind Coulee	Rosebud	Bearpaw Shale	Not an aquifer	NA	NA
West Blacktail Creek	Rosebud	Bearpaw Shale	Not an aquifer	NA	NA
Rattlesnake Creek	Rosebud	Bearpaw Shale	Not an aquifer	NA	Oil
Hay Creek	Powder River	Tullock /Fort Union and Hell Creek Fm.	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Poker Jim Gulch	Powder River	Tullock /Fort Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Butte Creek	Powder River	Tullock /Fort Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Kirnbull Creek	Custer	Ludlow /Fort Union and Hell Creek Fm	5-20gpm; ME 200	500-1800 mg/L	Oil, Gas, Scoria
Cottonwood Creek	Custer	Ludlow /Fort Union and Hell Creek Fm	5-20gpm; ME 200	500-1800 mg/L	Oil, Gas, Scoria
Strevell Creek	Custer	Tongue River and Lebo /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
South Strevell Creek	Custer	Lebo and Tullock /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
N. Fork Strevell Creek	Custer	Lebo/Ft. Union	Not an aquifer	NA	Oil, Gas, Scoria
First Creek	Custer	Lebo and Tullock /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Second Creek	Custer	Lebo and Tullock /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Mizpah	Custer	Tullock /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Home Creek	Custer	Lebo and Tullock /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Ash Creek Divide	Custer	Tongue River / Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Coal, Scoria
Strevell/Laney Divide	Custer	Tongue River and Lebo /Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
South Laney Creek	Custer	Tullock /Fort Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Powder River	Custer	Alluvium/Colluvium	5-50gpm; ME 1,500	500-5000 mg/L	Oil, Gas, Scoria
Pocochochee /Adams Divide	Carter	Hell Creek Fm.	5-20gpm; ME 200	500-1800 mg/L	Oil, Gas, Scoria
N. Fork Dry Creek	Carter	Upper Pierre Shale	Not an aquifer	NA	Oil, Gas
Dry Creek	Carter	Upper Pierre Shale	Not an aquifer	NA	Oil, Gas
Dry Creek Ridge	Carter	Lower Pierre Shale	Not an aquifer	NA	Oil, Gas
Miles City Creek	Fallon	Tongue River / Ft. Union	5-20gpm; ME 200	500-5000 mg/L	Oil, Gas, Scoria
Brush Creek	Fallon	Tongue River / Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Lower Yellowstone	Wibaux	Tongue River / Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
E. Fork Redwater River	Richland	Tongue River / Ft. Union	15-25gpm; ME 100	500-5000 mg/L	Oil, Gas, Scoria
Miles Butte	Blaine	Marias River Fm	Not an aquifer	NA	Gas
Murphy Coulee	Blaine	Fox Hills/Hell Creek Fm.	5-20gpm; ME 200	500-1800 mg/L	Gas, Gravel
Hogeland Ridge	Blaine	Fox Hills Fm.	5-20gpm; ME 200	500-1800 mg/L	Gas, Gravel
Turner South	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel

¹⁰ Geologic information is taken from 30'X60'Geologic Maps provided by the Montana Bureau of Mines and Geology.

¹¹ Groundwater Potential is based on typical production yields listed in the Montana Ground Water Atlas, listed in the format of a production range listed in gallons per minute (5-15 gpm) and what exceptional wells may exceed (ME 100 gpm).

¹² Based on typical range of Total Dissolved Solids (TDS) from the Montana Ground Water Atlas.

¹³ Minerals listed have a moderate to high "occurrence potential", but widely varied "development potential". Mineral potential is listed for information only and is based on BLM's mineral report. No mineral estate will be exchanged.

**Table 3-3 Groundwater, Geology and Mineral Potential of BLM Lands in the Phase III
Crow Boundary Settlement Act Exchange**

Tract Identity	County	Geologic Formation ¹⁰	Groundwater Potential ¹¹	Water Quality ¹²	Mineral Potential ¹³
Turner Colony Northwest	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel
Turner Colony West	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel
North Murray Coulee	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel
Murray Coulee	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel
Turner North	Blaine	Tertiary sand and gravel	5-50gpm; ME 1,500	300-2200 mg/L	Gas, Gravel
Upper Camp Creek	Phillips	Jurassic Undifferentiated, Madison Group, and Claggett Shale	20 6000gpm	500-300000 mg/L	NA
Lower Camp Creek	Phillips	Bearpaw Shale	Not an aquifer	NA	NA
Sand Hills	Phillips	Bearpaw, Judith River, Claggett, and Eagle Fm.	5-15gpm; ME 100 10-20gpm; ME 200	160-27000 mg/L 800-1500 mg/L	NA
Roanwood Valley	Valley	Tertiary sand and gravel Tullock /Ft. Union	5-50gpm; ME 1,500 Not an aquifer	300-2200 mg/L	Gravel
Mosquito Creek	Valley	Tullock /Ft. Union	Not an aquifer	NA	Gravel
Kamanski Hill	Valley	Tertiary sand and gravel Tongue River /Ft. Union	5-50gpm; ME 1,500 15-25gpm; ME 100	300-2200 mg/L 500-5000 mg/L	Gravel
West Fork Poplar River	Valley	Alluvium/Colluvium	5-50gpm; ME 1,500	500-5000 mg/L	Gravel
Morgan Coulee	Valley	Tullock /Ft. Union	Not an aquifer	NA	Gravel
Round Butte	Valley	Tertiary sand and gravel Tullock /Ft. Union	5-50gpm; ME 1,500 Not an aquifer	300-2200 mg/L	Gravel
Glentana East	Valley	Tertiary sand and gravel Tullock /Ft. Union	5-50gpm; ME 1,500 Not an aquifer	300-2200 mg/L	Gravel
Glentana South	Valley	Tertiary sand and gravel Tullock /Ft. Union	5-50gpm; ME 1,500 Not an aquifer	300-2200 mg/L	Gravel
Middle Fork	Valley	Hell Creek Fm.	5-20gpm; ME 200	500-1800 mg/L	Gravel
West Fork	Valley	Bearpaw Shale	Not an aquifer	NA	Gravel
Shonkin Creek	Chouteau	Marias River Shale; Quaternary Terrace	Not an aquifer 5-50 gpm; ME 1,500	NA 300/2200 mg/L	Gravel
Surenoough/Potter Divide	Fergus	Otter, Tyler, Heath, and Alaska Bench Fms. 20-6000gpm		500-300000 mg/L	NA
Dog Creek	Fergus	Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Rose / Dog Creek Divide	Fergus	Bearpaw/Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Rose Creek	Fergus	Bearpaw Shale	Not an aquifer	NA	Gas
Bloomfield Butte	Fergus	Judith River/Claggett Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Whiskey Ridge West	Fergus	Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Taffy Creek	Fergus	Bearpaw Shale	Not an aquifer	NA	Gas
Flax Coulee	Fergus	Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Taffy Ridge	Fergus	Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
Two Calf Creek	Fergus	Judith River Fm.	5-15gpm; ME 100	160-27000 mg/L	Gas
White Horse Butte	Fergus	Bearpaw Shale	Not an aquifer	NA	Gas
N. Fork Taffy Creek	Fergus	Bearpaw Shale	Not an aquifer	NA	Gas

3.1.4 Surface Water Rights

Water rights on BLM lands involved in the Phase III exchange are listed in Table 3-4. Water rights denoted with an asterisk (*) are rights that are on the BLM parcel, but are listed in the name of either the current or a previous BLM permittee.

3.1.5 Vegetation

The Montana Vegetation Types map¹⁴ lists vegetation types for the BLM lands involved in this exchange proposal. Table 3-5 indicates tracts and parcels within each vegetative type and typical species. While this table provides a description of vegetation that might be expected on each tract, it does not account for vegetative diversity that occurs within the vegetation types and should not be considered a detailed inventory of the vegetation on each tract or parcel.

¹⁴ Payne, G.E. 1973 Vegetative Rangeland Types in Montana, Montana Agricultural Experiment Station, Montana State University, Bozeman.

Table 3-4 Water Rights on BLM Land in the Phase III CBSA Exchange

Table 3-4 Water Rights on BLM Land in the Phase III CBSA Exchange					
Legal Description	Tract Identity	County	Acres	Water Rights	Use
T5N, R38E, PMM, Sec 10: NWNW, S2SW, NSW	Cache Coulee	Rosebud	160	None Listed	
T9N, R36E, PMM, Sec 6: lots 1-7, S2NE, SENW, E2SW, SE	Thebes Lake	Rosebud	630	None Listed	
T10N, R36E, PMM, Sec 30: lots 3,4, E2SW, SE	Blind Coulee	Rosebud	313.51	None Listed	
T10N, R36E, PMM, Sec 32: W2	West Blacktail Creek	Rosebud	320	None Listed	
T12N, R32E, PMM, Sec 24: E2	Rattlesnake Creek	Rosebud	320	None Listed	
T5S, R53E, PMM, Sec 15: all	Hay Creek	Powder River	640	42J -D008183, D009026	Stock Water
T3S, R52E, PMM, Sec 35: lots 1-12, N2	Poker Jim Gulch	Powder River	746.8	None Listed	
T1S, R53E, PMM, Sec 4: lots 1-4, S2N2, S2	Butte Creek	Powder River	634.1	42J -D009652, C056492, D010264	Stock Water Wildlife/Waterfowl
T4N, R53E, PMM, Sec 6: lots 1-11, S2NE, SENW, E2SW, SE	Kimball Creek	Custer	757.41	None Listed	
T5N, R52E, PMM, Sec 26: W2	Cottonwood Creek	Custer	320	None Listed	
T6N, R50E, PMM, Sec 2: lots 1-4, S2N2	Strevell Creek	Custer	321.64	None Listed	
T6N, R50E, PMM, Sec 24: all	South Strevell Creek	Custer	640	42J -P105977, D009744	Stock Water
T6N, R51E, PMM, Sec 6: lots 1,2,4, SENE	N. Fork Strevell Creek	Custer	156.62	42J -D006909*, E103451*	Stock Water
T6N, R51E, PMM, Sec 30: lots 1-4, E2, E2W2	First Creek	Custer	619.8	42J -P029163, D009662, D001701*, D008006,	
T6N, R51E, PMM, Sec 32: all	Second Creek	Custer	640	None Listed	
T6N, R53E, PMM, Sec 30: all (Lots 1-24 inclusive, E2	Home Creek	Custer	1207.48	None Listed	
T6N, R52E, PMM, Sec 30: Lots 4,7,9-11, 13,14, W2NESW, E2SESW, S2NWSESW, SWSESW	Mizpah	Custer	218.97	42J -D008006	Stock Water
T7N, R50E, PMM, Sec 30: lots 1,2, E2E2, NWNE, NENW	Ash Creek Divide	Custer	314.75	None Listed	
T7N, R51E, PMM, Sec 32: all	Strevell/Laney Divide	Custer	640	None Listed	
T7N, R51E, PMM, Sec 34: W2	South Laney Creek	Custer	320	42J -D006924*	Stock Water
T7N, R51E, PMM, Sec 36: W2NE, SENE, NWSE	Powder River	Custer	160	42J -D009655, D002489	Stock Water Irrigation
T4S, R55E, PMM, Sec 3: SW, W2SE	Pocochickee /Adams Divide	Carter	240	42J -D002447	Stock Water
T4S, R55E, PMM, Sec 10: N2NW, SESE	Pocochickee /Adams Divide	Carter	120	42J -C083561*	Stock Water
T4S, R55E, PMM, Sec 14: all	N. Fork Dry Creek	Carter	640	42J -C083561*, C083558, D002437	Stock Water Wildlife/Waterfowl
T4S, R55E, PMM, Sec 15: NESE	N. Fork Dry Creek	Carter	40	42J -C083558	Stock Water Wildlife/Waterfowl
T4S, R55E, PMM, Sec 21: NE	Dry Creek	Carter	160	None Listed	
T4S, R56E, PMM, Sec 29: S2	Dry Creek Ridge	Carter	320	None Listed	
T6N, R55E, PMM, Sec 8: all	Miles City Creek	Fallon	640	42L -W080347, W080348, W080349, W080350	Stock Water Wildlife
T6N, R55E, PMM, Sec 17: all	Miles City Creek	Fallon	640	42L -W080351, W080352, C038763	Stock Water Wildlife
T6N, R56E, PMM, Sec 1: lots 1-12, S2	Brush Creek	Fallon	776.96	42L -W080353, W080354, W080355, W080356	Stock Water Wildlife
T6N, R56E, PMM, Sec 12: all	Brush Creek	Fallon	640	42L -W080357, W080358, W080359, W080360	Stock Water Wildlife
T18N, R58E, PMM, Sec 6: lots 1-7, S2NE, SENW, E2SW, SE	Dry Creek	Wibaux	680.76	None Listed	
T24N, R53E, PMM, Sec 30: lots 3,4, E2SW, SE	E. Fork Redwater River	Richland	304.98	None Listed	
T. 29 N., R. 21 E., PMM, Sec. 08, S2NE	Miles Butte	Blaine	80	None Listed	
T. 35 N., R. 22 E., PMM, Sec. 01, SE.	Murphy Coulee	Blaine	280	40J-W066082, W066083	Stock Water

Table 3-4 Water Rights on BLM Land in the Phase III CBSA Exchange

Legal Description	Tract Identity	County	Acres	Water Rights	Use
N2SW, SESW					Wildlife
T 35 N., R. 22 E., PMM, Sec 02, S2	Murphy Coulee	Blaine	320	None Listed	
T 35 N., R. 22 E., PMM, Sec 11, W2;	Murphy Coulee	Blaine	320	40J -W066104, W066105, W066084, W066055, W066093, W066099, W066101, W066087, W066090, W066094, W066095, W066103, W066098, W066102, W066088, W066089, W066086, W066091, W066097, W066100, W066092, W066096	Stock Water Wildlife
T 35 N., R. 22 E., PMM, Sec. 12.	Murphy Coulee	Blaine	320	40J -C041472, W066106, W066107	Stock Water Wildlife
N2N2, SE					
T 35 N., R. 23 E., PMM, Sec. 07, Lot 1	Murphy Coulee	Blaine	36.88	None Listed	
T 35 N., R. 23 E., PMM, Sec. 29, E2SW, W2SE	Hogeland Ridge	Blaine	160	None Listed	
T 35 N., R. 23 E., PMM, Sec. 31, NENE	Hogeland Ridge	Blaine	40	None Listed	
T 35 N., R. 23 E., PMM, Sec. 32, N2N2	Hogeland Ridge	Blaine	160	40J -W066118, W066119	Stock Water Wildlife
T 35 N., R. 25 E., PMM, Sec. 14, S2SE	Turner South	Blaine	80	40J -C078836, C078836	Stock Water Wildlife/Waterfowl
T 35 N., R. 25 E., PMM, Sec. 21, E2	Turner Colony Northwest	Blaine	320	40J -W066134, W066135	Stock Water Wildlife
T 35 N., R. 25 E., PMM, Sec. 22, W2NW	Turner Colony Northwest	Blaine	80	None Listed	
T 35 N., R. 25 E., PMM, Sec. 32, E2NE	Turner Colony West	Blaine	80	40J -W066141, W066143	Stock Water Wildlife
T 35 N., R. 25 E., PMM, Sec. 33, N2, SW, NESE	Turner Colony West	Blaine	520	40J -W066139, W066145, C078837, W066138, W066140	Stock Water Wildlife/Waterfowl
T 36 N., R. 24 E., PMM, Sec. 03, Lots 3,4	North Murray Coulee	Blaine	38.8	None Listed	
T 36 N., R. 24 E., PMM, Sec. 10, N2, SE, SESW	Murray Coulee	Blaine	520	40J -W000128*	Stock Water
T 36 N., R. 24 E., PMM, Sec. 14, N2NW, SWNW	Murray Coulee	Blaine	120	40J -W066310, W066311	Stock Water Wildlife
T 36 N., R. 24 E., PMM, Sec. 15, N2	Murray Coulee	Blaine	320	40J -W041874*	Stock Water
T 36 N., R. 26 E., PMM, Sec. 19, Lots 1,2, SWNW	Turner North	Blaine	107.09	None Listed	
T 24 N., R. 26 E., PMM, Sec. 6, lot 3	Upper Camp Creek	Phillips	40.11	None Listed	
T 24 N., R. 26 E., PMM, Sec. 7, SWNE	Upper Camp Creek	Phillips	40	None Listed	
T 24 N., R. 26 E., PMM, Sec. 8, E2SE	Upper Camp Creek	Phillips	80	None Listed	
T 24 N., R. 26 E., PMM, Sec. 20, SWSW	Lower Camp Creek	Phillips	40	None Listed	
T 24 N., R. 26 E., PMM, Sec. 28, NWSE	Lower Camp Creek	Phillips	40	None Listed	
T 24 N., R. 26 E., PMM, Sec. 29, W2NE, W2SW, NWSE	Lower Camp Creek	Phillips	200	None Listed	
T 24 N., R. 26 E., PMM, Sec. 30, E2, NENW	Lower Camp Creek	Phillips	360	None Listed	
T 24 N., R. 25 E., PMM, Sec. 8, SESE	Sand Hills	Phillips	40	None Listed	
T 24 N., R. 25 E., PMM, Sec. 17, NENE, S2NE, NESW and SE	Sand Hills	Phillips	320	40EJ -W065265, W065266	Stock Water Wildlife
T 24 N., R. 25 E., PMM, Sec. 20, NENE	Sand Hills	Phillips	40	None Listed	

Table 3-4 Water Rights on BLM Land in the Phase III CBSA Exchange

Legal Description	Tract Identity	County	Acres	Water Rights	Use
T. 24 N., R. 25 E., PMM, Sec. 21, N2N2, SWNE, SENW	Sand Hills	Phillips	240	40EJ-P088325	Stock Water
T. 37 N., R. 40 E., PMM, Sec. 4, SESW	Roanwood Valley	Valley	40	None Listed	
T. 37 N., R. 40 E., PMM, Sec. 9, W2NE, SENE, E2NW, SW	Roanwood Valley	Valley	360	40Q -W077498, W077499, W013017*, W016614*	Stock Water Wildlife
T. 37 N., R. 41 E., PMM, Sec. 28, N2	Mosquito Creek	Valley	320	None Listed	
T. 37 N., R. 42 E., PMM, Sec. 21, NW, S2NE and E2SE	Kamansi Hill	Valley	320	40Q -W077502, W07750	Stock Water Wildlife
T. 36 N., R. 42 E., PMM, Sec. 2, lot 4 and SWNW	West Fork Poplar River	Valley	78.75	None Listed	
T. 36 N., R. 42 E., PMM, Sec. 3, lot 1 and SENE	West Fork Poplar River	Valley	78.75	None Listed	
T. 37 N., R. 42 E., PMM, Sec. 35, E2SW and W2SE	Morgan Coulee	Valley	160	None Listed	
T. 36 N., R. 41 E., PMM, Sec. 10, SW and W2SE	Round Butte	Valley	240	40Q -W077492, W077493	Stock Water Wildlife
T. 36 N., R. 41 E., PMM, Sec. 15, N2NW	Round Butte	Valley	80		
T. 36 N., R. 42 E., PMM, Sec. 23, E2SE	Glentana East	Valley	80	40Q -W187576*	Stock Water
T. 36 N., R. 42 E., PMM, Sec. 24, NENW S2NW and SW	Glentana East	Valley	280	40Q -W187576*	Stock Water
T. 35 N., R. 42 E., PMM, Sec. 8, SE	Glentana South	Valley	160	None Listed	
T. 35 N., R. 42 E., PMM, Sec. 9, SWNE, S2NW, W2SW	Glentana South	Valley	200	None Listed	
T. 34 N., R. 40 E., PMM, Sec. 11, S2	Middle Fork	Valley	320	400 -W042182*, W042183*, W130676*	Stock Water
T. 33 N., R. 39 E., PMM, Sec. 1, W2W2, SESW, SWSE	West Fork	Valley	240	None Listed	
T. 33 N., R. 39 E., PMM, Sec. 2, E2 and E2NW	West Fork	Valley	400	400 -W077399, W077400	Stock Water Wildlife
T. 21 N. R. 9 E., PMM, Sec. 8: SENE	Shonkin Creek	Chouteau	40	None Listed	
T. 13 N. R. 21 E., PMM, Sec. 15: NWSW	Surenough/Potter Divide	Fergus	40	None Listed	
T. 13 N. R. 21 E., PMM, Sec. 20: SENE, SE	Surenough/Potter Divide	Fergus	200	None Listed	
T. 13 N. R. 21 E., PMM, Sec. 21: SWNE, NENW, S2NW	Surenough/Potter Divide	Fergus	160	None Listed	
T. 13 N. R. 21 E., PMM, Sec. 28: NWNW	Surenough/Potter Divide	Fergus	40	None Listed	
T. 13 N. R. 21 E., PMM, Sec. 29: N2NE	Surenough/Potter Divide	Fergus	80	None Listed	
T. 20 N. R. 19 E., PMM, Sec. 8: W2W2, excl. lands west of RR	Dog Creek	Fergus	141.81	41T -W079235, W079236	Stock Water Wildlife
T. 20 N. R. 19 E., PMM, Sec. 9: SE, S2SW	Rose / Dog Creek Divide	Fergus	240	None Listed	
T. 20 N. R. 19 E., PMM, Sec. 15: N2	Rose Creek	Fergus	320	None Listed	
T. 21 N. R. 19 E., PMM, sec. 27: S2SW	Bloomfield Butte	Fergus	80	41T -W079247, W079248	Stock Water Wildlife
T. 21 N. R. 19 E., PMM, sec. 34: SW, E2NW	Bloomfield Butte	Fergus	240	41T -P051501	Stock Water
T. 22 N. R. 18 E., PMM, sec. 13: NWNW	Whiskey Ridge West	Fergus	40	None Listed	
T. 22 N. R. 19 E., PMM, sec. 9: W2NE	Taffy Creek	Fergus	80	None Listed	
T. 22 N. R. 19 E., PMM, sec. 18: NWNW, S2NW, N2SW, SESW, W2SE	Flax Coulee	Fergus	320	41T -W079284, W079285	Stock Water Wildlife
T. 22 N. R. 19 E., PMM, sec. 19: NE, N2SE, SWSE, S2SW	Flax Coulee	Fergus	400	None Listed	
T. 22 N. R. 19 E., PMM, sec. 20: NENE, W2NW	Flax Coulee	Fergus	120	41T -W079286, W079287	Stock Water Wildlife
T. 22 N. R. 19 E., PMM, sec. 21: SW	Taffy Ridge	Fergus	160	None Listed	
T. 22 N. R. 20 E., PMM, sec. 3: S2S2, NESE	Two Calf Creek	Fergus	200	None Listed	
T. 22 N. R. 20 E., PMM, sec. 4: SESW	White Horse Butte	Fergus	40	None Listed	
T. 22 N. R. 20 E., PMM, sec. 10: N2NW, NWNE	Two Calf Creek	Fergus	120	None Listed	
T. 22 N. R. 20 E., PMM, sec. 15: NWNW	N. Fork Taffy Creek	Fergus	40	None Listed	

Table 3-5 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)
Foothills Grassland

Table 3-5 Vegetative Type Characteristics of BLM Lands (Species in bold type are distinguishing species)				
Foothills Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Shonkin Creek Miles Butte	Bluebunch wheatgrass Western wheatgrass Idaho fescue Sheep fescue Needle-and-thread Mountain brome Pumpelly brome Thickspike wheatgrass Bluegrass Sandberg bluegrass Prairie junegrass Green needlegrass Blue grama	Western yarrow Clubmoss Lupine Phlox	Douglas hawthorne Saskatoon serviceberry Western chokecherry Russet buffaloberry Rose	Quaking aspen
Badlands Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Home Creek Strevell Creek N. Fork Strevell Creek South Strevell Creek First Creek Second Creek Mizpah Strevell Laney Divide South Laney Creek Cottonwood Creek Kimball Creek Lower Yellowstone Powder River	Blue grama Western wheatgrass Needle-and-thread Buffalograss Sandberg bluegrass Bluebunch wheatgrass Plains muhly Little bluestem Green needlegrass Prairie sandreed	Broom snakeweed Phlox Wildbuckwheat Scarlet globemallow Goosefoot	Shadscale saltbush Greasewood Sagebrush Plains pricklypear Silver sagebrush Rabbitbrush Nuttall saltbush Creeping juniper	Absent or Occasional
Northeastern Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
E. Fk. Redwater River	Little Bluestem Blue Grama Needle-and-thread Western Wheatgrass Plains Muhly Sandberg Bluegrass Green Needlegrass Threadleaf Sedge Needleleaf Sedge	Broom Snakeweed Fringed Sagewort Phlox Scarlet Globemallow Woolly plantain Wildbuckwheat	Plains Pricklypear Rose Skunkbush Sumac Creeping Juniper	Absent or Occasional

Table 3-5 Vegetative Type Characteristics of BLM Lands
(Species in bold type are distinguishing species)

Ponderosa Pine Savannah				
Tracts	Grasses	Forbs	Shrubs	Trees
Ash Creek Divide	Western Wheatgrass Bluebunch Wheatgrass Blue Grama Sandberg Bluegrass Needle-and-thread Little Bluestem Buffalograss Prairie Junegrass Indian Ricegrass Idaho Fescue Sideoats Grama	Phlox Lupine Wild Buckwheat	Skunkbush Sumac Common Snowberry Plains Pricklypear	Ponderosa Pine Rocky Mountain Juniper
Southeastern Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Butte Creek Poker Jim Gulch Hay Creek Pocochichee/Adams Divide Miles City Creek Brush Creek	Buffalograss Blue grama Western wheatgrass Threadleaf sedge Sandberg bluegrass Needle-and-thread Thickspike wheatgrass Bluebunch wheatgrass Prairie junegrass	Plantain Scarlet globemallow Wild onion Biscuitroot Fringed sagewort	Big sagebrush Silver sagebrush Nuttall saltbush Plains pricklypear	Absent or Occasional
Sagebrush-Saltbush				
Tracts	Grasses	Forbs	Shrubs	Trees
Dry Creek N. Fk. Dry Creek Dry Creek Ridge Thebes Lake Blind Coulee W. Blacktail Creek Rattlesnake Creek	Thickspike wheatgrass Streambank wheatgrass Alkali sacaton Western wheatgrass Blue grama Plains reedgrass Needle-and-thread Sandberg bluegrass Green Needlegrass Indian nicegrass Threadleaf sedge	Biscuitroot Nuttall monolepis Wild onion Wildbuckwheat Scarlet globemallow Broom Snakeweed	Scurfless Saltbush Nuttall saltbush Sagebrush Plains pricklypear Black greasewood	Absent or Occasional
Northern Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Roanwood Valley Mosquito Creek Kamanski Hill W. Fork Poplar Riv Morgan coulee Glentana East West Fork Turner Colony West Murphy Coulee Hogeland Ridge	Blue grama Western wheatgrass Sedges Needleleaf sedge Needle-and-thread Prairie Junegrass Plains reedgrass Threadleaf sedge	Clubmoss Fringed Sagewort	Absent or occasional	Absent or occasional

**Table 3-5 Vegetative Type Characteristics of BLM Lands
(Species in bold type are distinguishing species)**

Sandy Grassland/Northern Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Gleniana South Round Butte Middle Fork Murray Coulee N. Murray Coulee Turner North Turner South Turner Colony NW	Needle-and-thread Threadleaf sedge Bluebunch Wheatgrass Indian nicegrass Blue Grama Prairie Junegrass Sand bluestem Sand dropseed	Breadfoot Scurfpea Scarlet globemallow Purple pointlow	Yucca Rose Chokecherry Skunkbush sumac	Absent or Occasional
Lodgepole Pine—Douglas Fir Forest				
Tracts	Grasses	Forbs	Shrubs	Trees
Surenough/Potter Divide	Pine Reedgrass Elksedge Bluegrass	Showy aster	Big Wortleberry Shinyleaf spirea Rose spirea Utah honeysuckle Grouse Wortleberry	Lodgepole pine Douglas fir Ponderosa pine Rocky Mtn. juniper
Central Grassland				
Tracts	Grasses	Forbs	Shrubs	Trees
Upper Camp Creek Lower Camp Creek Sand Hills Cache Creek Dog Creek Rose/Dog Creek Divide Rose Creek Bloomfield Butte Whiskey Ridge West Taffy Creek Flax Coulee Taffy Ridge Two Calf Creek White Horse Butte N. Fork Taffy Creek	Blue grama Western wheatgrass Needle-and-thread Sandberg bluegrass Green Needlegrass Bluebunch Wheatgrass Plains reedgrass Prairie junegrass Plains muhly Threadleaf sedge Needleleaf sedge	Fringed sagewort Broom snakeweed Phlox Wild buckwheat Scarlet globemallow	Sagebrush Plains pricklypear	Absent or Occasional

3.1.5.1 Rare Plants

No threatened or endangered plants are known to exist on the parcels of BLM lands considered for exchange. No inventories have been conducted on most or all of these tracts so no sensitive plant species were detected during a Natural Heritage Program data search. However, in some cases, rare or sensitive plants exist or have historically existed nearby the lands being exchanged, which may include similar habitat with potential for

these rare plants. For example, smooth goosefoot (*Chenopodium subglabrum*) is present at one site on sandy soil on the floodplain of the Powder River near Locate. Bractless mentzelia (*Mentzelia nuda*) grows in sandy or gravelly soils and was also recorded in the Locate area. The Powder River tract is on the Powder River floodplain about seven miles upstream from the smooth goosefoot and bractless mentzelia occurrences and may have similar habitat and potential for these plants to exist.

3.1.5.2 Noxious Weeds

Noxious weed infestations were noted during field inspections on two BLM tracts. Leafy spurge is widespread along the floodplain and bottomlands of the lower Yellowstone River. Small individual infestations of leafy spurge were noted on the Lower Yellowstone tract in Wibaux County. There was also a significant infestation of bull thistle on the Miles City Creek tract in Fallon County. Weeds may be present, but have not been formally documented on the other BLM tracts.

3.1.6 Wildlife Habitat and Fisheries

Almost all of the BLM land would be considered good to excellent habitat for some of the usual wildlife

species common to eastern Montana. These species would include big game, such as mule and white-tailed deer on the tracts with brush, juniper, and ponderosa pine cover and pronghorn antelope in the more open grassy tracts. Some tracts had signs of coyote, bobcat, raccoon, porcupine, and other smaller mammals. Birds, ranging from neotropical migrants, upland game birds (particularly sharp-tailed and sage grouse), waterfowl, to raptors probably commonly use these lands to some degree. Table 3-6 is intended to provide information about these lands where special circumstances should be noted, beyond what might be usually expected for wildlife and fisheries. Where necessary, these circumstances are discussed in more detail following Table 3-6. Appendix D contains a list of U.S. Fish and Wildlife Service candidate, threatened and endangered species, BLM species of special concern, and BLM watch species that have some probability of occurring on one or more exchange land sites.

Table 3-6 Wildlife and Habitat on BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Crucial Big Game Habitat	T&E Species Present	Species of Concern	Wetlands Present	Fishery Present
Cache Coulee	Rosebud	No	No	Prairie Dogs	No	No
Thebes Lake	Rosebud	Antelope Winter Range	No	No	No	No
Blind Coulee	Rosebud	Antelope Winter Range	No	No	No	No
West Blacktail Creek	Rosebud	Antelope Winter Range	No	No	Yes	No
Rattlesnake Creek	Rosebud	No	No	Sage Grouse	Yes	No
Hay Creek	Powder River	No	No	No	No	No
Poker Jim Gulch	Powder River	No	No	Two inactive ferruginous hawk nests	No	No
Butte Creek	Powder River	No	No	Raptor nest	No	No
Kimball Creek	Custer	No	No	No	No	No
Cottonwood Creek	Custer	No	No	No	No	No
Strevell Creek	Custer	No	No	No	No	No
South Strevell Creek	Custer	No	No	No	Yes	No
N. Fork Strevell Creek	Custer	No	No	No	No	No
First Creek	Custer	No	No	No	Yes	No
Second Creek	Custer	No	No	Prairie Dogs	Yes	No
Mizpah	Custer	No	Sturgeon Chub	No	Yes	Yes
Home Creek	Custer	No	No	No	Yes	No
Ash Creek Divide	Custer	No	No	No	No	No
Strevell/Laney Divide	Custer	No	No	Big Horn Sheep	No	No
South Laney Creek	Custer	No	No	Prairie Dogs, Raptor nest	Yes	No
Powder River	Custer	No	Bald Eagle	No	Riparian Bottom	No
Pocochicchee /Adams Divide	Carter	No	No	No	No	No
N. Fork Dry Creek	Carter	No	No	No	Yes	No
Dry Creek	Carter	No	No	No	No	No
Dry Creek Ridge	Carter	No	No	No	No	No
Miles City Creek	Fallon	No	No	Two inactive ferruginous hawk nests	Yes	No
Brush Creek	Fallon	No	No	No	Yes	No

Table 3-6 Wildlife and Habitat on BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Crucial Big Game Habitat	T&E Species Present	Species of Concern	Wetlands Present	Fishery Present
Lower Yellowstone	Wibaux	Mule Deer Winter Range	No	No	No	No
E. Fork Redwater River	Richland	No	No	No	Yes	No
Miles Butte	Blaine	No	No	No	No	No
Murphy Coulee	Blaine	Pronghorn migratory path	No	Sage and sharptail grouse leks	Yes	No
Hogeland Ridge	Blaine	No	No	No	Yes	No
Turner South	Blaine	No	No	No	No	No
Turner Colony Northwest	Blaine	No	No	No	No	No
Turner Colony West	Blaine	No	No	No	No	No
North Murray Coulee	Blaine	Neotropical migrants	No	No	Yes	No
Murray Coulee	Blaine	Neotropical migrants	No	No	Yes	No
Turner North	Blaine	No	No	No	No	No
Upper Camp Creek	Phillips	No	No	Sage Grouse	Yes	No
Lower Camp Creek	Phillips	No	No	Sage Grouse	Yes	No
Sand Hills	Phillips	No	No	Sage Grouse	Yes	No
Roanwood Valley	Valley	No	No	No	No	No
Mosquito Creek	Valley	No	No	No	No	No
Kamanski Hill	Valley	No	No	No	No	No
West Fork Poplar River	Valley	No	No	No	No	No
Morgan Coulee	Valley	No	No	No	No	No
Round Butte	Valley	No	No	No	No	No
Glentana East	Valley	No	No	No	No	No
Glentana South	Valley	No	No	No	No	No
Middle Fork	Valley	No	No	No	No	No
West Fork	Valley	No	No	No	No	No
Shonkin Creek	Chouteau	No	No	No	No	No
Surenoough/Potter Divide	Fergus	No	No	No	Yes	No
Dog Creek	Fergus	No	No	No	Yes	No
Rose / Dog Creek Divide	Fergus	No	No	No	No	No
Rose Creek	Fergus	No	No	No	No	No
Bloomfield Butte	Fergus	No	No	No	No	No
Whiskey Ridge West	Fergus	No	No	No	No	No
Taffy Creek	Fergus	No	No	No	No	No
Flax Coulee	Fergus	No	No	No	No	No
Taffy Ridge	Fergus	No	No	No	No	No
Two Calf Creek	Fergus	No	No	No	No	No
White Horse Butte	Fergus	No	No	No	No	No
N. Fork Taffy Creek	Fergus	No	No	No	No	No

3.1.6.1 Blaine County Wildlife

The Murray Coulee, North Murray Coulee and Murphy coulee tracts consist of mostly native shortgrass prairie habitat with springs, coulees, lotic riparian brush communities, prairie potholes, and healthy sagebrush communities. The prairie habitat is crucial habitat for many neotropical migrants and has been identified as one of the fastest declining habitat types in North America. These tracts are isolated within large blocks of private and State rangeland, pasture land, conservation reserve program (CRP) land, and grain fields. These tracts contain high value habitat for waterfowl, mule and white-tail deer, pronghorn, sharptail grouse, sage grouse(species of concern), ferruginous

hawk(species of concern), Swainsons hawk, swift fox(candidate for listing), long-billed curlew, loggerhead shrike(species of concern), and many other species dependant on this habitat type.

The Murray Coulee tract has 1.5 miles of Mesquito Creek running through it, which was inventoried and shown to be in Proper Functioning Condition (PFC) with both herbaceous and woody riparian vegetation. Although the creek flows underground through gravel layers at points, the pools have water year round and the water table supports a healthy riparian community. The uplands are a healthy sagebrush grassland habitat type.

The Murphy Coulee tract has a small spring and pool with .3 mile of herbaceous riparian habitat. There are known sage and sharptail grouse leks within this allotment, a ferruginous hawk nest, and important winter cover for mule and whitetail deer. This allotment is bordered on three sides by grain or CRP fields. This allotment is in the migratory path for a large number of Alberta pronghorn during hard winters and herds of over 300 animals have been seen.

With the exception of the Miles Butte tract, the rest of the Blaine County tracts fall on what is known locally as the Big Flat. The Big Flat is “elevated” short grass prairie habitat and part of the “Prairie Pothole” country which extends into Canada and east to Minnesota. The majority of this habitat, nationally and locally, has been extensively farmed for small grains where terrain and soils allow. These tracts are isolated within large blocks of private and State rangeland, tame pasture land, CRP lands, and grain fields. Many of these tracts were once farmed and reseeded under the Bankhead-Jones Act into crested wheatgrass. These tracts are used seasonally by a variety of wildlife including but not limited to pronghorn, whitetail and mule deer, Hungarian partridge, sharptail grouse, coyotes, red fox, northern harrier, meadowlarks, mourning dove, and various sparrows. The bird species using these tracts can be considered generalists and have not seen the dramatic declines of other grassland adapted species. Natural reseeding of some native species has occurred within these tracts, providing some habitat diversity which does not occur in adjacent grain or CRP fields. These tracts have not been classified as crucial habitat for any wildlife species.

3.1.6.2 Carter County Wildlife

Four tracts are located in the Alzada area of Carter County. These tracts (Pocochee /Adams Divide, N. Fork Dry Creek, Dry Creek, and Dry Creek Ridge) include bottomlands with silty overflow sites, rolling prairie, and upland breaks. Habitats included shrub/grassland, grassland, and some pine/juniper. The Natural Heritage Program has identified the general area as being important ferruginous hawk nesting habitat. Mountain plovers are found about 12 miles northeast of this area and potentially, mountain plovers could use the silty overflow sites found in the N. Fork Dry Creek and Dry Creek tracts. However, these sites are small and would be marginal for mountain plover use. These two tracts also include dense stands of big

sagebrush and would probably be excellent sage grouse and pronghorn habitat. Dry Creek Ridge includes upland breaks and appears to be good sharptail grouse and mule deer habitat. All of these tracts also contain what appears to be suitable habitat for swift foxes, but there is no evidence that swift foxes occur in this area.

3.1.6.3 Chouteau County Wildlife

The only tract in Chouteau County is the small 40-acre Shonkin Creek tract. It generally offers sagebrush/grassland habitat with a brushy coulee. A county road runs diagonally through the tract and in the coulee. The tract is not considered critical habitat for any species but offers good sharp-tailed grouse habitat.

3.1.6.4 Custer County Wildlife

Twelve tracts in Custer County include bottomlands, river breaks/badlands topography, and upland pine/juniper breaks associated generally with an area referred to as the Powder River Breaks. In addition, the Ash Creek Divide tract is situated on the Powder River/Tongue River divide.

The vegetation on these tracts is dominated by shrub/grasslands with steep southern exposures containing very little vegetation. Some northern slopes in this area were timbered with ponderosa pine and Rocky Mountain juniper, or just contained scattered pine and juniper. For the most part, drainages located on sites within the Powder River breaks did not support well developed riparian vegetation. Instead, the drainages were dominated by silver sagebrush and western wheatgrass. However, the Powder River and Mizpah tracts include Powder River bottomlands with plains cottonwood trees, and the Ash Creek Divide tract includes a portion of a drainage with stands of green ash.

All these parcels contained good to excellent mule deer habitat. Deer and/or deer sign were observed on all the tracts. At sites adjacent to the river (e.g. Powder River tract), deer appeared to be feeding on bottomlands during the night and traveling back to the river breaks habitat during the day. Although only limited distributions of ponderosa pine and Rocky Mountain juniper occur in the Powder River breaks, the broken topography in this area provides considerable cover for mule deer. The breaks habitat also appears to receive some

use by white-tailed deer, and appeared to be suitable for elk though no sign of elk was observed.

This breaks area appeared to be excellent sharp-tailed grouse habitat, and sharp-tailed grouse were frequently observed along the Powder River. One small flock of sage grouse was observed on the Second Creek tract. The sagebrush bottomlands and benches of the Powder River were probably once excellent sage grouse habitat but they are now substantially converted to agricultural cropland. A larger flock of sage grouse was observed along the Trail Creek Road directly east of the Kimball Creek tract.

The Powder River breaks appeared to be excellent coyote and bobcat habitat. Numerous coyote scats and tracks were observed in this area. This area contained many sink holes that are known to provide hiding cover for bobcats (Brian Giddings, personal communication). These sink holes also appeared to provide cover for desert cottontails. This area is too dissected to be suitable habitat for the swift fox (a BLM sensitive species). Mountain lions might range through this portion of the Powder River breaks but no sign of lions was observed.

Black-tailed prairie dog colonies were found on the South Laney Creek tract (less than 1 acre) and the First Creek tract (3 acres of a 20-40 acre colony). The black-tailed prairie dog is a candidate threatened species. Both these colonies were capable of providing habitat for burrowing owls, but were too small for black-footed ferrets and were located in inappropriate habitat for mountain plovers.

Several bald eagles were observed along the Powder River bottomlands indicating that the Powder River is a migration corridor for eagles. This area is probably also used as winter habitat during mild winters. The area may also might provide eagle nesting habitat since mature plains cottonwood trees occur along the Powder River, but a 1989 survey (the most recent survey data) failed to find an eagle nest along the river (Dennis Flath, personal communication). Topographically, the Powder River breaks offer many good nesting sites for ferruginous hawks, but the bottomlands are largely cultivated in this area and prairie dogs (a primary prey species) have been substantially reduced.

Two tracts (Strevell Creek and Ash Creek Divide) are located at higher elevations within the Powder River breaks and contain considerable pine and juniper cover. These sites are excellent deer and grouse habitat, and wild turkey sign was found within the Ash Creek Divide tract. The Strevell/Laney Divide tract is located adjacent to the Powder River bottomlands and contains a high butte used by bighorn sheep. This is apparently the southern distributional range of a small bighorn sheep herd that ranges north to the Yellowstone River breaks. Montana FWP no longer issues hunting permits for this sheep herd, and has no management concerns for this herd because private landowners control access.

3.1.6.5 Fallon County Wildlife

Two tracts (Brush Creek and Miles City Creek) near Baker are in upland areas within the O'Fallon Creek drainage basin. Both sites included grassland, shrub/grassland, and pine/juniper habitats. Two ferruginous hawk nests were found on and adjacent to the Miles City Creek tract. One nest appeared to have been used recently and was probably an occupied ferruginous hawk territory. Both sites appeared to be excellent deer, turkey and sharp-tailed grouse habitat. These sites also contain what appears to be suitable habitat for swift foxes, but there is no evidence that swift foxes occur in this area.

3.1.6.6 Fergus County Wildlife

The Surenough/Potter Divide parcel in southeastern Fergus County is mostly forested land. Forest vegetation consists primarily of ponderosa pine, Douglas fir and small patches of stunted aspen that are being taken over by the conifers. Much of the ponderosa type consists of very dense young pole stage pine trees. Elk, white-tailed deer, and ruffed grouse were abundant on this parcel in early May and there also was recent evidence of black bear and Merriam's turkey. This parcel also could be habitat for blue grouse and mule deer and many other forest dwelling forest animals and birds. Red-tailed hawks use the vicinity but no nests were located. The dense young stands of ponderosa would provide ideal areas for goshawk nests but none were located. This area has habitat available to support large numbers of neotropical migrants. The tract has not been classified as crucial or critical habitat for any wildlife species at this time.

Most tracts near Winifred are vegetated primarily with sagebrush grassland. There is a small piece of riparian habitat on the Dog Creek parcel. These parcels generally have a herbaceous understory sufficient for nesting cover for sage grouse and other ground nesting birds. There are no known sage grouse leks on these parcels, but they provide important nesting habitat in areas fragmented by farm land that has no sagebrush cover.

The Whiskey Ridge West, Flax Coulee and Taffy Creek tracts offer "breaks" habitat with ponderosa pine coulees, scattered sagebrush grass flats, and barren slopes and clay knobs. These tracts provide some marginal mule deer habitat and some opportunity for raptor nesting. The barren ground and the individual small trees would be appropriate areas for ferruginous hawk nests, but none have been documented on these tracts.

3.1.6.7 Phillips County Wildlife

The BLM tracts in southern Phillips County consist of several isolated tracts of BLM land intermixed with State and privately owned lands. Management to increase values for wildlife is limited due to the fractured land ownership pattern. These lands are dominated by a sagebrush grassland habitat type with scattered ponderosa pine along ridge tops. Two unnamed retention reservoirs located within the Lower Camp Creek tract were rated as properly functioning condition during the 1997 and 1998 riparian inventories. These reservoirs provide habitat for a variety of terrestrial, avian and amphibian species. The Sandhills Reservoir located within the Sandhills tract is a pit/retention reservoir and was rated as functioning at risk in the 1998 riparian inventory. This reservoir has developed a large saline seep downstream from the fill. This reservoir is a valuable watering source for wildlife. The usual wildlife common to eastern Montana could be expected to use the area. Mule deer and pronghorn antelope are the most common big game species. Elk may occasionally use the area when pushed out of more favorable habitat during the hunting season. These tracts do not provide critical habitat for any threatened or endangered species. Sage grouse, a sensitive status species which may be proposed for threatened or endangered listing in the near future, use the area year round. A historical sage grouse lek was located in the Lower Camp Creek tract, but it is not known if this lek

is currently active. No fisheries are associated with these tracts.

3.1.6.8 Powder River County Wildlife

Generally, the three tracts within Powder River County fit within the general description of the lands in Custer County, although one tract (Hay Creek) is located within an upland area of the Little Powder River drainage basin.

These parcels contain good to excellent mule deer habitat. Deer and/or deer sign were observed at all the sites. The Poker Jim Gulch tract, adjacent to the Powder River, had deer feeding on bottomlands during the night and traveling back to the river breaks habitat during the day.

These tracts appear to be excellent sharp-tailed grouse habitat, and may also contain sage grouse. Besides the likely use of the Powder River bottomlands by eagles, two old ferruginous hawk nests were found on the Poker Jim Gulch tract.

3.1.6.9 Richland County Wildlife

The East Fork Redwater River tract is located along the East Redwater River and included both bottomland and upland badland/breaks habitat. The East Redwater River flows through a portion of this site and includes a small amount of wetlands and riparian habitat. This site appeared to be good mule deer and sharp-tailed grouse habitat. Ferruginous hawks would also be expected to use this area. This site contains what appears to be suitable habitat for swift foxes, but there is no evidence that swift foxes occur in this area.

3.1.6.10 Rosebud County Wildlife

Four tracts are located in the Ingomar area. These lands have rolling prairie with shrub/grassland habitat. The Rattlesnake Creek tract is located close to a known sage grouse lek and is nesting and brood rearing habitat. The Thebes Lake, Blind Coulee and West Blacktail Creek tracts are regarded as critical pronghorn winter range and a large group of pronghorn was observed on this site. Although not directly observed on the four tracts in the area, the Ingomar area is known to support a substantial ferruginous hawk population and periodic

use of these sites by ferruginous hawks would be expected. Mountain plovers and burrowing owls have been observed on prairie dog colonies near the Thebes Lake, Blind Coulee and West Blacktail Creek tracts, and mountain plovers are also documented to use silty overflow sites without prairie dogs in this general area. These tracts contain some small silty overflow sites that would be marginally suitable for plovers. These sites also contain what appears to be suitable habitat for swift foxes, but there is no indication that swift foxes are in this area.

The Cache Coulee tract is located in rolling prairie habitat along Reservation Creek west of Forsyth. A small (approximately 5 acres) prairie dog colony was located immediately adjacent to this site and prairie dogs could expand on to the site. This colony would be suitable habitat for burrowing owls but because of the limited acreage it would not be suitable for black-footed ferrets and mountain plovers. Ferruginous hawks would be expected in this area during summer. The area is considered to be fair mule deer and sharp-tailed grouse habitat.

3.1.6.11 Valley County Wildlife

Overall, the lands within Valley County are dominated by grasslands. Big sagebrush does not grow in this part of Valley County, and silver sagebrush would be very unusual on these lands. Other shrubs such as buffaloberry, willows, chokecherry, and snowberry can grow in the appropriate sites. The usual wildlife common to eastern Montana could be expected to use the area. Mule deer and pronghorn antelope are the most common big game species with an occasional white-tailed deer. Coyotes are common furbearers. Sharp-tailed grouse and gray partridge are the small game bird species of this area. Ring-necked pheasants, turkeys and sage grouse would be unusual. Mourning doves would be commonplace migratory upland game birds. Northern harriers and American kestrels are the typical raptors. No cliff nesting bird species or colonial nesting water bird species would be found on these tracts. For the other nongame and neotropical migratory birds, horned larks and western meadowlarks would be the most abundant species. Vesper sparrows and chestnut-collared longspurs would be common. No prairie dog colonies are found on these lands, so burrowing owls would be rare.

These tracts do not provide critical habitat for any threatened or endangered species. However, some of the tracts may contain habitat conducive to use by Baird's sparrow and Sprague's pipit (West Fork, Mosquito Creek, West Fork Poplar River and Glentana East tracts) and loggerhead shrikes (Roanwood Valley tract). These are BLM species of special concern. No fisheries are associated with these tracts.

3.1.6.12 Wibaux County Wildlife

The Lower Yellowstone tract is located immediately adjacent to the bottomlands of the Yellowstone River and comprises upland badland/breaks habitat. Numerous mule deer and deer sign was observed in this area and it appeared to be excellent deer habitat. This site contains critical mule deer winter range. Bald eagles nest, migrate and winter along the Yellowstone River, and occasional use of this site by bald eagles would be expected. The interior least tern and pallid sturgeon (both endangered) may use the Yellowstone River and its environs in this area, but they would not be associated with this site.

3.1.6.13 Threatened and Endangered Species

None of the BLM lands have been identified as specifically providing crucial or critical habitat for any threatened or endangered species. Some of the BLM lands are near or within the range of certain species that have some official designation under the Endangered Species Act (ESA). For example, the swift fox (*Vulpes velox*) is listed as a "candidate" species, which means it probably should be listed as threatened or endangered, but because of higher priorities, has not yet been listed. There is a known population (estimated at four breeding pairs) and at least 41 confirmed sightings of swift fox in a broad area north of the Milk River between Chinook and Hinsdale and extending into Canada. The BLM lands within northern Blaine County are within this general area.

The interior population of the least tern (*Sterna antillarum athalassos*) is an endangered species that breeds in isolated areas along the Missouri, Mississippi, Ohio, Red, and Rio Grande river systems, including an area along the Lower Yellowstone, near the BLM tract with that same identifier. From late April to August,

terns use barren to sparsely vegetated sandbars along rivers, sand and gravel pits, or lake and reservoir shorelines. The terns nest in a shallow hole scraped in an open sandy area, gravelly patch, or exposed flat. The Lower Yellowstone tract does not provide the habitat used by the least tern for nesting, but is within a mile of such habitat along the Yellowstone River. Dams, reservoirs, and other changes to river systems have eliminated most historic least tern habitat. Recreational activities on rivers and sandbars can disturb the nesting terns, causing them to abandon their nests.

The Powder River is probably the only river that borders or crosses any exchange lands large enough to support a year-round fishery. Although it is not considered an important recreational fishery, it provides habitat to several species with special designation. These include the endangered pallid sturgeon (*Scaphirhynchus albus*), the sturgeon chub (*Hybopsis gelida*), a candidate for listing as endangered, and two species BLM denotes as having special status, the blue sucker (*Cyclopterus elongatus*) and spiny softshell (*Trionyx spiniferus*). Several tracts are near the Powder River and the Mizpah tract borders the river and includes a small island in the Powder River. This is the only site that includes waters of the Powder River that might affect these species.

3.1.7 Recreation

Most of the BLM lands probably receive some amount of recreational use, particularly those adjacent to roads providing public access. However, none of the BLM lands stand out as being particularly significant from the recreation perspective. Two tracts (Surenough/Potter Divide and Ash Creek) have trees large enough to be considered commercial timber that might support a greater variety of recreational pursuits, but neither of these tracts has public access. Other tracts with smaller

trees that are accessible include the Brush Creek and Flax Coulee tracts. Even these tracts show no outward indication of significant recreational use. Most of the BLM tracts are far enough from population centers to be removed from all but occasional recreational use, which probably would occur only during hunting season.

3.1.8 Cultural Resources

Land exchanges have been defined by 36 CFR 800.9.b.5., as one of those activities which can have an "adverse effect" on archaeological and historical sites. The proposed land exchange with the State of Montana, as a result of the Crow Boundary Settlement Act, has removed the designation of "adverse effect" due to the fact that the State of Montana has essentially the same requirements for site protection as does the federal government, and no private individuals are involved in the exchange. None of the parcels listed in this environmental assessment would be traded into private ownership.

In an attempt to facilitate this exchange, and to provide for the requirements of Section 106 of the National Historic Preservation Act; a programmatic agreement was struck between the State of Montana and the Montana State Office of BLM which would allow for the trade of parcels without a cultural resource inventory. This agreement was reached with the understanding that the BLM archaeological staff would be available to assist with inventories for subsequent developments involving land use changes by the State of Montana, at the discretion of the archaeologist for the Department of Natural Resources and Conservation. This Agreement was signed and became effective in December 1996.

3.1.9 Access

Most of the BLM lands are accessible via walk-in access from public roads, or across other public lands (State or federal) adjacent to public roads. Some lands have primitive road access directly from public (State or county) roads or across other public lands. About 19 tracts either have no public access or link corner-to-corner to other State or federal lands, and this corner-to-corner spatial relationship is not considered public access. Table 3-7 summarizes access to the BLM lands. The "Other" column of Table 3-7 lists special access types that exist on some parcels. The Mizpah tract borders directly on the Powder River, which is a navigable stream, so it is presumed that the public also could reach this parcel by walking along or in the river within the normal high water marks of the river. The Powder River and Lower Yellowstone tracts could also be reached this way, only across intervening State land that lies between the river and the BLM tracts. The Sand Hills tract does not have legal public access, but during field inspection, signs along the county road

indicated it is within a block management unit that allows walk-in hunter access across private lands. Finally, the Surenough-Potter Divide tract is being transferred to the State with a non-exclusive administrative easement previously purchased by BLM. This means that although the public does not have access to these lands, the State would acquire the administrative easement, allowing administrative access to both the BLM lands and the currently landlocked State section adjacent to the BLM lands.

3.1.10 Socioeconomics

3.1.10.1 Timber, Grazing and Agricultural Lease Revenue

The Surenough/Potter Divide tract in Fergus County and the Ash Creek Divide tract in Custer County have some commercial timber stands, along with meadows and interspersed timber and grass that provide grazing. The remainder of the BLM lands have either a grassland or sagebrush\grassland vegetative type suited to

Table 3-7 Access to BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Access	Highway/County Rd.	Walk-in	Other
Cache Coulee	Rosebud	No			
Thebes Lake	Rosebud	No			
Blind Coulee	Rosebud	No			
West Blacktail Creek	Rosebud	No			
Rattlesnake Creek	Rosebud	No			
Hay Creek	Powder River	Yes	No	Yes	
Poker Jim Gulch	Powder River	Yes	No	Yes	
Butte Creek	Powder River	Yes	No	Yes	
Kimball Creek	Custer	Yes	Yes	Yes	
Cottonwood Creek	Custer	Yes	Yes	Yes	
Strevell Creek	Custer	No			
South Strevell Creek	Custer	No			
N. Fork Strevell Creek	Custer	No			
First Creek	Custer	No			
Second Creek	Custer	No			
Mizpah	Custer	Yes	Yes	Yes	Stream
Home Creek	Custer	No			
Ash Creek Divide	Custer	No			
Strevell/Laney Divide	Custer	No			
South Laney Creek	Custer	Yes	Yes	Yes	
Powder River	Custer	Yes	No	Yes	Stream
Pocochee/Adams Divide	Carter	Yes	No	Yes	
N. Fork Dry Creek	Carter	Yes	No	Yes	
Dry Creek	Carter	Yes	No	Yes	
Dry Creek Ridge	Carter	Yes	No	Yes	
Miles City Creek	Fallon	Yes	Yes	Yes	
Brush Creek	Fallon	No			
Lower Yellowstone	Wibaux	Yes	No	Yes	Stream
E. Fork Redwater River	Richland	No			
Miles Butte	Blaine	Yes	Yes	Yes	
Murphy Coulee	Blaine	Yes	Yes	Yes	

Table 3-7 Access to BLM Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Access	Highway/County Rd.	Walk-in	Other
Hogeland Ridge	Blaine	Yes	Yes	Yes	
Turner South	Blaine	Yes	Yes	Yes	
Turner Colony Northwest	Blaine	Yes	Yes	Yes	
Turner Colony West	Blaine	Yes	Yes	Yes	
North Murray Coulee	Blaine	No			
Murray Coulee	Blaine	Yes	Yes	Yes	
Turner North	Blaine	Yes	Yes	Yes	
Upper Camp Creek	Phillips	Yes	Yes	Yes	
Lower Camp Creek	Phillips	Yes	Yes	Yes	
Sand Hills	Phillips	Yes	No	Yes	Block Mgmt.
Roanwood Valley	Valley	Yes	No	Yes	
Mosquito Creek	Valley	No			
Kamanski Hill	Valley	Yes	No	Yes	
West Fork Poplar River	Valley	Yes	Yes	Yes	
Morgan Coulee	Valley	No			
Round Butte	Valley	No			
Glentana East	Valley	Yes	Yes	Yes	
Glentana South	Valley	Yes	Yes	Yes	
Middle Fork	Valley	Yes	Yes	Yes	
West Fork	Valley	Yes	No	Yes	
Shonkin Creek	Chouteau	Yes	Yes	Yes	
Surenough/Potter Divide	Fergus	Yes	No	No	Administrative
Dog Creek	Fergus	Yes	Yes	Yes	
Rose / Dog Creek Divide	Fergus	Yes	Yes	Yes	
Rose Creek	Fergus	Yes	Yes	Yes	
Bloomfield Butte	Fergus	Yes	Yes	Yes	
Whiskey Ridge West	Fergus	Yes	No	Yes	
Taffy Creek	Fergus	Yes	No	Yes	
Flax Coulee	Fergus	Yes	Yes	Yes	
Taffy Ridge	Fergus	Yes	No	Yes	
Two Calf Creek	Fergus	Yes	Yes	No	
White Horse Butte	Fergus	Yes	No	Yes	
N. Fork Taffy Creek	Fergus	Yes	No	Yes	

grazing. Some of the tracts in northern Blaine county appear to have been previously broken and have been reseeded back to grass. Table 3-8 lists the estimated revenue produced for BLM. The revenue figures were generated by using the BLM minimum grazing fee and represent only one season of grazing. This grazing fee represents the lowest possible rate (\$1.35/AUM) due to temporary conditions in the market.

3.1.10.2 Payment in Lieu of Taxes

BLM is required by 31 USCA § 6902 to continue to make Payment in Lieu of Taxes (PILT) payments to local governments for the BLM lands that will be transferred to State ownership, as long as the tracts remain in State ownership. Should any of the lands acquired eventually be traded or sold to private entities, then the lands would be taxed by local governments like any other private lands.

Table 3-8 Revenue from BLM Phase III CBSA Lands

Tract Identifier	County	AUM's	Acres	BLM Revenue	\$/Acre/Yr.
Cache Coulee	Rosebud	37	160	\$49.95	\$0.31
Thebes Lake	Rosebud	70	630	\$94.50	\$0.15
Blind Coulee	Rosebud	35	320	\$47.25	\$0.15
West Blacktail Creek	Rosebud	41	313.51	\$55.35	\$0.18
Rattlesnake Creek	Rosebud	74	320	\$99.90	\$0.31
Hay Creek	Powder River	145	640	\$195.75	\$0.31

Table 3-8 Revenue from BLM Phase III CBSA Lands

Tract Identifier	County	AUM's	Acres	BLM Revenue	\$/Acre/Yr.
Poker Jim Gulch	Powder River	164	746.8	\$221.40	\$0.30
Butte Creek	Powder River	157	634.1	\$211.95	\$0.33
Kimball Creek	Custer	166	757.41	\$224.10	\$0.30
Cottonwood Creek	Custer	69	320	\$93.15	\$0.29
Strevell Creek	Custer	62	321.64	\$83.70	\$0.26
South Strevell Creek	Custer	69	640	\$93.15	\$0.15
N Fork Strevell Creek	Custer	30	156.62	\$40.50	\$0.26
First Creek	Custer	82	619.8	\$110.70	\$0.18
Second Creek	Custer	116	640	\$156.60	\$0.24
Mizpah	Custer	75	218.97	\$101.25	\$0.46
Ash Creek Divide	Custer	96	314.75	\$129.60	\$0.41
Strevell/Laney Divide	Custer	213	640	\$287.55	\$0.45
South Laney Creek	Custer	107	320	\$144.45	\$0.45
Powder River	Custer	64	160	\$86.40	\$0.54
Pocochee /Adams Divide	Carter	120	360	\$162.00	\$0.45
N Fork Dry Creek	Carter	194	680	\$261.90	\$0.39
Dry Creek	Carter	46	160	\$62.10	\$0.39
Dry Creek Ridge	Carter	50	320	\$67.50	\$0.21
Miles City Creek	Fallon	322	1280	\$434.70	\$0.34
Brush Creek	Fallon	306	1416.96	\$413.10	\$0.29
Lower Yellowstone	Wibaux	196	680.76	\$264.60	\$0.39
E. Fork Redwater River	Richland	77	304.98	\$103.95	\$0.34
Miles Butte	Blaine	21	80	\$28.35	\$0.35
Murphy Coulee	Blaine	300	1276.88	\$405.00	\$0.32
Hogeland Ridge	Blaine	67	360	\$90.45	\$0.25
Turner South	Blaine	19	80	\$25.65	\$0.32
Turner Colony Northwest	Blaine	97	400	\$130.95	\$0.33
Turner Colony West	Blaine	180	600	\$243.00	\$0.41
North Murray Coulee	Blaine	8	38.8	\$10.80	\$0.28
Murray Coulee	Blaine	261	960	\$352.35	\$0.37
Turner North	Blaine	32	107.09	\$43.20	\$0.40
Upper Camp Creek	Phillips	36	160.11	\$48.60	\$0.30
Lower Camp Creek	Phillips	110	640	\$148.50	\$0.23
Sand Hills	Phillips	105	640	\$141.75	\$0.22
Roanwood Valley	Valley	68	400	\$91.80	\$0.23
Mosquito Creek	Valley	54	320	\$72.90	\$0.23
Kamanski Hill	Valley	51	320	\$68.85	\$0.22
West Fork Poplar River	Valley	30	157.5	\$40.50	\$0.26
Morgan Coulee	Valley	30	160	\$40.50	\$0.25
Round Butte	Valley	48	320	\$64.80	\$0.20
Glentana East	Valley	60	360	\$81.00	\$0.23
Glentana South	Valley	61	360	\$82.35	\$0.23
Middle Fork	Valley	58	320	\$78.30	\$0.24
West Fork	Valley	150	640	\$202.50	\$0.32
Shonkin Creek	Chouteau	8	40	\$10.80	\$0.27
Surenough/Potter Divide	Fergus	50	520	\$67.50	\$0.13
Dog Creek	Fergus	0	141.81		
Rose / Dog Creek Divide	Fergus	69	240	\$93.15	\$0.39
Rose Creek	Fergus	104	320	\$140.40	\$0.44
Bloomfield Butte	Fergus	92	320	\$124.20	\$0.39
Whiskey Ridge West	Fergus	4	40	\$5.40	\$0.14
Taffy Creek	Fergus	15	80	\$20.25	\$0.25
Flax Coulee	Fergus	228	840	\$307.80	\$0.37
Taffy Ridge	Fergus	36	160	\$48.60	\$0.30
Two Calf Creek	Fergus	72	320	\$97.20	\$0.30
White Horse Butte	Fergus	10	40	\$13.50	\$0.34
N. Fork Taffy Creek	Fergus	7	40	\$9.45	\$0.24
Total/Average		5,724.00	25,878.49	\$7,727.40	\$0.29

Of the eleven counties where BLM lands are proposed for exchange, Blaine, Carter, Chouteau, Fallon, Powder River, Richland and Valley counties have more than six percent State land within the counties and are eligible for State equalization payments. Fergus, Phillips, and Wibaux counties have less than six percent State lands and would continue to be below that threshold value even if the proposed exchange occurred. Custer County would increase its State holdings to 6.12 percent and would become eligible for equalization payments. Table 3-9 indicates the estimated increase in equalization payments that would be received by eligible counties. Custer County is not included in Table 3-9, because it was not previously eligible and no estimation of the gross assessment of State lands exists as a basis for determining the equalization payment. However, the payment to Custer County will be relatively small and is not likely to exceed \$500.00. Because PILT payments will continue by the federal government, the equalization payments will result in a modest net increase in county revenue.

3.1.10.3 Land Values

Table 3-10 lists the BLM land values established from the appraisal. The appraiser also included the values of permittee improvements so they can be recognized when the transfer is made to the State. However, the BLM and State have agreed that the exchange will be made on the basis of the appraised land value and will not include the value of improvements. There are two tracts with commercial timber and the value of these tracts also includes the value of the marketable timber, as agreed upon by consensus of the parties after reviewing the cruise data and stumpage values from nearby sales. These two tracts are the Ash Creek Divide tract in Custer County and the Surenough/Potter Divide tract in Fergus County. Taking into account the ledger account established in earlier Phase I and II exchanges, the value of the BLM land exceeds the value of the State land in Phase III by approximately \$528,000.00. This means that some of the BLM lands with that approximate amount of value will not be exchanged to the State.

Table 3-9 Change in State Equalization Payments From the Phase III Exchange

Table 3-9 Change in State Equalization Payments From the Phase III Exchange			
County	Old Payment	New Payment	Difference
Blaine	\$8,097.61	\$9,693.34	\$1,595.73
Carter	\$5,697.40	\$6,179.30	\$481.90
Chouteau	\$120,278.76	\$120,302.00	\$23.23
Fallon	\$2,115.53	\$3,444.34	\$1,328.81
Powder River	\$8,041.16	\$9,021.00	\$979.84
Richland	\$1,377.03	\$2,150.53	\$773.50
Valley	\$11,980.51	\$13,271.49	\$1,290.98

Table 3-10 Appraised Value of Phase III BLM Lands

Table 3-10 Appraised Value of Phase III BLM Lands					
Tract Identity	County	Acres	Improvements	Price/Acre	Land Value
Cache Coulee	Rosebud	160		\$140.00	\$22,400.00
Thebes Lake	Rosebud	630	\$1,750.00	\$60.00	\$37,800.00
Blind Coulee	Rosebud	313.51		\$60.00	\$18,810.60
West Blacktail Creek	Rosebud	320		\$60.00	\$19,200.00
Rattlesnake Creek	Rosebud	320	\$2,625.00	\$65.00	\$20,800.00
Hay Creek	Powder River	640	\$875.00	\$145.00	\$92,800.00
Poker Jim Gulch	Powder River	746.8	\$875.00	\$135.00	\$100,818.00
Butte Creek	Powder River	634.1	\$1,750.00	\$145.00	\$91,944.50
Kimball Creek	Custer	757.41	\$1,750.00	\$130.00	\$98,463.30
Cottonwood Creek	Custer	320		\$120.00	\$38,400.00
Strevell Creek	Custer	321.64		\$120.00	\$38,596.80
South Strevell Creek	Custer	640	\$7,680.00	\$120.00	\$76,800.00
N. Fork Strevell Creek	Custer	156.62		\$130.00	\$20,360.60
First Creek	Custer	619.8		\$130.00	\$80,574.00
Second Creek	Custer	640		\$120.00	\$76,800.00
Mizpah	Custer	218.97		\$145.00	\$31,750.65
Home Creek	Custer	1207.48		\$120.00	\$144,897.60
Ash Creek Divide	Custer	314.75	\$3,777.00	\$120.00	\$54,870.00
Strevell/Laney Divide	Custer	640		\$120.00	\$76,800.00
South Laney Creek	Custer	320		\$120.00	\$38,400.00
Powder River	Custer	160		\$120.00	\$19,200.00
Pocochickee /Adams Divide	Carter	360	\$1,440.00	\$120.00	\$46,800.00
N. Fork Dry Creek	Carter	680	\$1,355.00	\$135.00	\$91,200.00
Dry Creek	Carter	160		\$120.00	\$19,200.00
Dry Creek Ridge	Carter	320		\$120.00	\$38,400.00
Miles City Creek	Fallon	1280	\$22,360.00	\$120.00	\$153,600.00
Brush Creek	Fallon	1416.96	\$25,754.00	\$120.00	\$170,035.20
Lower Yellowstone	Wibaux	680.76		\$100.00	\$68,076.00
E. Fork Redwater River	Richland	304.98	\$1,750.00	\$100.00	\$30,498.00
Miles Butte	Blaine	80		\$110.00	\$8,800.00
Murphy Coulee	Blaine	1276.88		\$90.00	\$114,919.20
Hogeland Ridge	Blaine	360		\$90.00	\$32,400.00
Turner South	Blaine	80		\$85.00	\$6,800.00
Turner Colony Northwest	Blaine	400		\$85.00	\$34,000.00
Turner Colony West	Blaine	600		\$85.00	\$51,000.00
North Murray Coulee	Blaine	38.8		\$85.00	\$3,298.00
Murray Coulee	Blaine	960		\$85.00	\$81,600.00
Turner North	Blaine	107.09		\$85.00	\$9,102.65
Upper Camp Creek	Phillips	160.11		\$80.00	\$12,808.80
Lower Camp Creek	Phillips	640		\$80.00	\$51,200.00
Sand Hills	Phillips	640		\$80.00	\$51,200.00
Roanwood Valley	Valley	400	\$3,938.00	\$75.00	\$30,000.00
Mosquito Creek	Valley	320	\$3,500.00	\$75.00	\$24,000.00
Kamanski Hill	Valley	320	\$4,850.00	\$75.00	\$24,000.00
West Fork Poplar River	Valley	157.5	\$3,063.00	\$85.00	\$13,387.50
Morgan Coulee	Valley	160		\$75.00	\$12,000.00
Round Butte	Valley	320		\$75.00	\$24,000.00
Glentana East	Valley	360		\$75.00	\$27,000.00
Glentana South	Valley	360		\$75.00	\$27,000.00
Middle Fork	Valley	320		\$85.00	\$27,200.00
West Fork	Valley	640		\$75.00	\$48,000.00
Shonkin Creek	Chouteau	40		\$300.00	\$12,000.00
Surenough/Potter Divide	Fergus	520		\$525.00	\$579,375.00

Table 3-10 Appraised Value of Phase III BLM Lands

Tract Identity	County	Acres	Improvements	Price/Acre	Land Value
Dog Creek	Fergus	141.81		\$150.00	\$21,271.50
Rose / Dog Creek Divide	Fergus	240		\$125.00	\$30,000.00
Rose Creek	Fergus	320		\$125.00	\$40,000.00
Bloomfield Butte	Fergus	320		\$120.00	\$38,400.00
Whiskey Ridge West	Fergus	40		\$120.00	\$4,800.00
Taffy Creek	Fergus	80		\$100.00	\$8,000.00
Flax Coulee	Fergus	788.62	\$1,200.00	\$100.00	\$78,862.00
Taffy Ridge	Fergus	160		\$100.00	\$16,000.00
White Horse Butte	Fergus	40		\$100.00	\$4,000.00
Two Calf Creek	Fergus	320		\$100.00	\$32,000.00
N. Fork Taffy Creek	Fergus	40		\$100.00	\$4,000.00
Totals		27,034.59	\$90,292.00	\$113.48	\$3,400,719.90

3.1.11 Hydrologic and Soil Resources

Table 3-11 lists the approximate mileage of perennial streams on the BLM lands being evaluated for exchange. The table also indicates if the stream or river is considered navigable and if it is accessible from a public access point adjacent to the parcel. In addition, there are many miles of intermittent drainages on the BLM lands, which may have water at certain times of the year. In some cases, there are stock water dams on the parcel (See Water Rights). The stock reservoirs are not large enough or reliable enough to support fisheries,

but they do provide habitat for aquatic life adapted to prairie ponds and waterfowl.

While there may be a thin veneer of alluvial (water deposited) soils along some streams, soils generally have developed in situ over the underlying geologic materials. These parent materials, along with climate, vegetation, relief, and time are the primary factors that have led to soil formation.¹⁵ Table 3-12 shows the general soils types expected at each tract, based on a soils map of Montana developed by the Soil Conservation Service, in cooperation with the U.S. Forest Service, Montana Agricultural Experiment Station, and Montana State University.

Table 3-11 BLM Lands crossed by Perennial Streams in the Phase III Exchange

BLM Tract	Stream	Miles on Parcel	Navigable Stream	Public Access
Mizpah	Powder River	.75	Yes	Yes
Murray Coulee	Murray Coulee	2.0	No	Yes
Middle Fork	MF Porcupine Creek	.50	No	Yes
W. Fork Poplar River	W. Fork Poplar River	.30	No	Yes

¹⁵ Brady, N.C., 1974. The Nature and Property of Soils. McMillan Publishing, New York, NY.

Table 3-12 General Soils for BLM Exchange Tracts

Tracts/Parcels	General Soils Description	Uses
E. Fork Redwater River, Roanwood Valley, Mosquito Creek, Kamanski Hill, Morgan Coulee, W. Fork Poplar River, Round Butte, Glentana East, Glentana South.	On the eastern glacial till plains. Mollisols ¹⁶ and Entisols ¹⁷ occur on the rolling plains, with Entisols dominating the hilly sections.	Rangeland and Dry Land Farming
West Fork, Middle Fork, Murphy Coulee, Murray Coulee, North Murray Coulee, Hogeland Ridge, Turner North, Turner South, Turner Colony Northwest, Turner Colony West, Lower Camp Creek.	Central till plains have Aridisols ¹⁸ on rolling plains and Entisols and Aridisols on hilly sections. Mollisols are found in nearly level sections.	Dry Land Farming and Rangeland
Cache Coulee, Hay Creek, Poker Jim Gulch, Butte Creek, Kimball Creek, Cottonwood Creek, Strevell Creek, South Strevell Creek, N. Fork Strevell Creek, First Creek, Second Creek, Home Creek, Mizpah, Ash Creek Divide, Strevell Laney Divide, South Laney Creek, Powder River, Miles City Creek, Brush Creek.	Soils are generally Entisols and Aridisols of the grasslands and shrublands.	Rangeland and Dry Land Farming
Lower Yellowstone, Pocochee-Adams Divide.	Soils of the southeastern plains include Entisols, Mollisols, and Inceptisols ¹⁹ , with Mollisols dominating the gently rolling hills and Entisols and Inceptisols on the steeper slopes.	Rangeland and Dry Land Farming
Thebes Lake, Blind Coulee, West Blacktail Creek, Rattlesnake Creek, Dry Creek, N. Fork Dry Creek, Dry Creek Ridge, Dog Creek, Rose-Dog Creek Divide, Rose Creek, Bloomfield Butte, Whiskey Ridge West, Taffy Creek, Flax Coulee, Taffy Ridge, Two Calf Creek, White Horse Butte, N. Fork Taffy Creek.	On clayey-shale plains, soils Entisols and Aridisols, with Entisols dominating badlands and river "breaks"	Rangeland
Miles Butte, Upper Camp Creek, Sand Hills, Shonkin Creek, Surenough-Potter Divide.	Soils of the foothills are mostly Mollisols, with some Inceptisols. Lower slopes and terraces are Mollisols, Aridisols and Entisols.	Rangeland and Dry Land Farming

¹⁶ Mollisols are soils with deep, dark, relatively fertile topsoil (mollic epipedon) formed under grassland vegetation of the steppes and prairies.

¹⁷ Entisols are recently formed soils resulting from a variety of influences that interrupt or impede the pedogenic process, such as erosion on poorly vegetated sites.

¹⁸ Aridisols are soils of arid regions that are dry more than 50 percent of most years and not moist as much as 90 consecutive days when the soils are warm enough for plant growth.

¹⁹ Inceptisols are "embryonic" soils with few diagnostic features, usually associated with resistant bedrock or extreme positions on the landscape, like steep slopes.

3.2 State Lands

3.2.1 General Geography, Topography and Aesthetics

The State lands involved in this exchange are generally located in the southeastern quadrant and west of the Bighorn River on the Crow Reservation in south central Montana. The area is part of the Rocky Mountain Foreland²⁰, a transitional zone between the true plains and the Rocky Mountains. The Crow Reservation offers a wide variety of geographic and topographic settings, ranging from alpine (over 9,000 ft.) in the Bighorn Mountains to riparian floodplains (2,800-3,000 ft.) along the Bighorn and Little Bighorn rivers. Generally, the State lands that are proposed for exchange are between these two extremes in foothills and along intermittent drainages. Most consist of grassland or grassland/sagebrush tracts that are used as part of a larger dry land grazing complex. Table 3-13 provides some general information regarding the geographic setting, topography and aesthetics of the lands in the exchange.

3.2.2 Climate

The Crow Reservation has a continental climate with cold winters and warm to hot summers. In Hardin, the July average daily maximum temperate is 90° F, with an average minimum of 55° F. In January the average maximum and minimum temperatures are 32° F and 6° F, respectively. Precipitation varies with elevation from around 10 inches per year along the Big Horn River between St. Xavier and Hardin, to over 30 inches in the Pryor and Bighorn mountains. All of the tracts of State land involved with the exchange are in a zone of 15-20 inches of annual precipitation, with just over half that coming in the growing season months of April through July.

3.2.3 Groundwater, Geology and Mineral Potential

The reservation includes parts of the folded Middle Rocky Mountains, represented by the Bighorn and Pryor mountains, while the remainder of the reservation lies within the western portion of the Powder River Basin. The high topography in the southwestern part of the reservation is due to the uplift and folding of the Bighorn and Pryor mountains, which include primarily Paleozoic rocks, including the fairly distinctive limestones of the Madison Group which form the sides of Bighorn Canyon. Some Upper Paleozoic (Tensleep Formation), Mesozoic (Chugwater, Reirdon, Swift, and Morrison Formations) and lower Cretaceous (Kootenai Formation) units also outcrop on State lands along the flank of the Bighorn Mountain uplift.

The Wolf and Rosebud Mountains along the eastern side of the reservation result from the eroded, upturned margins of younger, Paleocene strata that extend eastward into the Powder River Basin. The Fort Union formation, known for its coal beds is the primary formation (with the Tullock, Lebo, and Tongue River Members of that formation) present on the eastern side of the reservation.

Between these higher zones on the west and east are lower areas, dominated by late Cretaceous formations. These units are dominated by thick, dark grey shales with some sandstone units, localized bentonite beds, and some lignite and coal seams. Generally these shales are differentiated into the Colorado Group (Thermopolis, Mowry, Belle Fourche, Greenhorn, Carlile, and Niobrara Formations) and the Montana Group (Gammon, Claggett, Judith River, Bearpaw and Fox Hills Formations). Of these, only the Judith River Formation and Fox Hills Formation are sandstones and considered to be significant aquifers. Along the northwestern edge of the reservation, the Cretaceous Eagle Sandstone outcrops as a white, fine-to-medium grained sandstone with individual cliff-forming beds up to 50 feet thick. Terraces and floodplain deposits occur along

²⁰ Rocky Mountain Foreland is an environmental region more fully described in the First Annual Report, Montana Environmental Quality Council, 1972.

Table 3-13 General Geography, Topography and Aesthetics of State Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Landscape Position ²¹	Topography ²²	View ²³	Scenery ²⁴
Pryor Creek	YE	Intermediate	Dissected	Wide	Mixed
Broken Leg Creek	YE	Intermediate	Dissected	Wide	Mixed
East Buckeye Creek	YE	Intermediate	Flat to Rolling	Wide	Prairie
Stratford Hill	YE	Upland	Flat to Rolling	Expansive	Prairie
Magpie Coulee	YE	Intermediate	Dissected	Wide	Sage
Birdhead Creek	YE	Intermediate and Upland	Badlands	Expansive	Sage
Woody Mountain	YE	Intermediate and Upland	Badlands	Expansive	Sage
West Fork Woody Creek	YE	Intermediate and Upland	Dissected	Wide	Prairie
Cottonwood Creek	BH	Intermediate	Rolling	Wide	Sage
Little Woody Creek	BH	Intermediate	Rolling to Broken	Wide	Sage
Big Woody Creek	BH	Intermediate	Rolling to Broken	Wide	Sage
Beauvais Creek	BH	Intermediate	Flat to Rolling	Wide	Prairie
Lower Beauvais Creek	BH	Intermediate	Flat to Rolling	Open	Prairie/Cropland
Muddy Creek	BH	Intermediate	Rolling to Broken	Wide	Sage
Hay Coulee	BH	Intermediate	Flat to Rolling	Wide	Prairie/Cropland
Camp Four	BH	Lowland	Flat to Rolling	Wide	Prairie/Cropland
Lower Soap Creek	BH	Intermediate	Dissected	Wide	Sage
Cottonwood Coulee	BH	Intermediate and Upland	Rolling	Wide	Prairie
Mission Coulee	BH	Intermediate and Upland	Rolling	Wide	Prairie
N. Fork Good Luck Creek	BH	Intermediate	Rolling	Wide	Prairie
Rotten Grass Divide	BH	Intermediate and Upland	Rolling to Broken	Expansive	Prairie/Sage
Good Luck Creek	BH	Intermediate	Rolling	Wide	Sage
Dry Head Creek	BH	Intermediate and Upland	Rolling to Broken	Expansive	Sage
Dry Soap Creek	BH	Intermediate	Rolling to Broken	Expansive	Prairie/Sage
Soap Creek	BH	Intermediate	Broken	Expansive	Mixed
Lower Lodgegrass Creek	BH	Intermediate	Rolling	Wide	Prairie
Alligator Creek	BH	Intermediate and Upland	Flat to Rolling	Expansive	Prairie/Mixed
Halfway Creek	BH	Intermediate	Flat to Rolling	Open	Prairie
Little Owl Creek	BH	Intermediate	Rolling	Wide	Prairie/Sage
Indian Creek	BH	Intermediate and Upland	Rolling to Broken	Open	Mixed
Crazy Creek	BH	Intermediate	Rolling	Wide	Prairie
Wyola	BH	Intermediate	Rolling	Wide	Prairie
Bear Creek	BH	Intermediate	Broken	Open	Mixed
Dry Fork Coulee	BH	Intermediate	Rolling to Dissected	Wide	Prairie/Sage
Dry Ridge	BH	Intermediate	Rolling to Dissected	Expansive	Mixed
Sport Creek	BH	Intermediate	Broken	Expansive	Sage
Black Gulch	BH	Intermediate and Upland	Broken	Expansive	Sage
Owl Creek	BH	Intermediate	Flat to Rolling	Wide	Sage

²¹ Landscape position is described in broad terms relative to major drainages and intervening divides. This characteristic is divided into Lowland (floodplain or terraces near the primary drainage), Intermediate (lands between Lowland and Upland), and Upland (on or straddling the divide).

²² Topography is divided into categories of increasing drainage density and roughness of terrain using descriptive terms like Flat, Rolling, Broken, Dissected, and Badland.

²³ If views are typically 10-20 miles, they are termed Expansive; 5-10 miles, Wide; 1-5 miles, Open; less than a mile, Narrow; and less than 200 yards, Closed.

²⁴ Scenery depicts the typical vegetation you might see at this site. Sage denotes sagebrush and grass mixed, Prairie denotes mostly grassland, Mixed means mixed scattered trees, grass and/or sagebrush, and Timber denotes most views are of timber stands.

the Bighorn and Little Bighorn rivers and along some perennial streams like Pryor Creek and Lodgegrass Creek. Some higher level terrace deposits in the northeastern portion of the reservation are interpreted to be remnant deposits from the ancestral Shoshone River. Geology of the State parcels is described generally in Table 3-14.

Groundwater potential is closely tied to the geology of the Crow Reservation. The only areas where relatively high volumes of good quality water are available are in the alluvium along the major rivers and streams. Because alluvium is limited in extent and relatively shallow, none of the areas where the State tracts exist are particularly conducive to the production of either large quantities or good quality groundwater. Small

Table 3-14 Groundwater, Geology and Mineral Potential of State Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Geologic Formation ²⁵	Groundwater Potential ²⁶	Water Quality ²⁷	Minerals ²⁸
Pryor Creek	YE	Eagle Formation	10-20gpm; ME 200	800-1500 mg/L	Not Applicable
Broken Leg Creek	YE	Eagle Formation	10-20gpm; ME 200	800-1500 mg/L	Not Applicable
East Buckeye Creek	YE	Mowry Shale Ancestral Terrace Gravel	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
Stratford Hill	YE	Mowry Shale	Not an Aquifer	NA	Not Applicable
Magpie Coulee	YE	Thermopolis Shale Ancestral Terrace Gravel	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
Birdhead Creek	YE	Thermopolis Shale	Not an Aquifer	NA	Not Applicable
Woody Mountain	YE	Thermopolis Shale	Not an Aquifer	NA	Not Applicable
West Fork Woody Creek	YE	Thermopolis Shale	Not an Aquifer	NA	Not Applicable
Cottonwood Creek	BH	Niobrara Formation	Not an Aquifer	NA	Not Applicable
Little Woody Creek	BH	Carlile Formation	Not an Aquifer	NA	Not Applicable
Big Woody Creek	BH	Carlile Formation	Not an Aquifer	NA	Not Applicable
Beauvais Creek	BH	Carlile Formation	Not an Aquifer	NA	Not Applicable
Lower Beauvais Creek	BH	Belle Fourche Formation Quaternary Alluvium	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
Muddy Creek	BH	Thermopolis Shale	Not an Aquifer	NA	Not Applicable
Hay Coulee	BH	Greenhorn Formation Belle Fourche Formation Quaternary Terrace	Not an Aquifer Not an Aquifer 5-50gpm; ME 1500	NA NA 300-2200 mg/L	Not Applicable
Camp Four	BH	Carlile Formation Quaternary Terrace	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
Lower Soap Creek	BH	Carlile Formation	Not an Aquifer	NA	Not Applicable
Cottonwood Coulee	BH	Niobrara Formation Quaternary Terrace	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
Mission Coulee	BH	Gammon Formation Quaternary Terrace	Not an Aquifer 5-50gpm; ME 1500	NA 300-2200 mg/L	Not Applicable
N. Fork Good Luck Creek	BH	Gammon Formation	Not an Aquifer	NA	Not Applicable
Rotten Grass Divide	BH	Gammon Formation	Not an Aquifer	NA	Not Applicable
Good Luck Creek	BH	Claggett Formation	Not an Aquifer	NA	Not Applicable
Dry Head Creek	BH	Chugwater Formation Tensleep Sandstone	20-6000gpm if wells penetrate Madison Fm.	500-300000 mg/L	Not Applicable
Dry Soap Creek	BH	Belle Fourche Formation Mowry Shale	Not an Aquifer	NA	Not Applicable
Soap Creek	BH	Madison Formation Tensleep Sandstone	20-6000gpm if wells penetrate Madison Fm.	500-300000 mg/L	Not Applicable
Lower Lodgegrass Creek	BH	Gammon Formation	Not an Aquifer	NA	Not Applicable
Alligator Creek	BH	Claggett Formation	Not an Aquifer	NA	Not Applicable

²⁵ Geologic information is taken from 30'X60'Geologic Maps provided by the Montana Bureau of Mines and Geology.

²⁶ Groundwater Potential is based on typical production yields listed in the Montana Ground Water Atlas, figures represent a production range listed in gallons per minute (5-15 gpm) and what exceptional wells may exceed (ME 100 gpm).

²⁷ Based on typical range of Total Dissolved Solids (TDS) from the Montana Ground Water Atlas.

²⁸ Mineral potential has not been assessed, since the minerals are not owned by the state. No mineral estate will be exchanged.

Table 3-14 Groundwater, Geology and Mineral Potential of State Lands in the Phase III Crow Boundary Settlement Act Exchange

Tract Identity	County	Geologic Formation ²⁵	Groundwater Potential ²⁶	Water Quality ²⁷	Minerals ²⁸
Halfway Creek	BI1	Judith River Formation	5-15gpm, ME 100	160-27000 mg/L	Not Applicable
Little Owl Creek	BI1	Lance Formation	5-25gpm, ME 200	500-5000 mg/L	Not Applicable
Indian Creek	BH	Ft. Union Tongue River Fm	5-25gpm, ME 200	500-5000 mg/L	Not Applicable
Crazy Creek	BH	Gammom Formation	Not an Aquifer	NA	Not Applicable
Wyola	BI1	Claggett Formation	Not an Aquifer	NA	Not Applicable
Bear Creek	BH	Ft. Union Lebo Shale	Not an Aquifer	NA	Not Applicable
Dry Fork Coulee	BI1	Chugwater Formation Tensleep Sandstone	20-6000gpm if wells penetrate Madison Fm.	500-300000 mg/L	Not Applicable
Dry Ridge	BH	Madison Formation Tensleep Sandstone	20-6000gpm if wells penetrate Madison Fm	500-300000 mg/L	Not Applicable
Sport Creek	BH	Morrison Formation Kootenai Formation	Not an Aquifer 10-30gpm, ME 100	200-500 mg/L	Not Applicable
Black Gulch	BH	Kootenai, Morrison, Swift, and Reardon formations	10-30gpm, ME 100 Not an Aquifer	200-500 mg/L NA	Not Applicable
Owl Creek	BI1	Lance Formation	5-25gpm, ME 200	500-5000 mg/L	Not Applicable

amounts of water good enough for stock watering have been obtained from some of the sandstone units in the Cretaceous shales generally not considered to be aquifers. Similar results of limited quantities of water can be expected from the sandstone units of the Fort Union Formation and other aquifers listed on Table 3-14. The mineral potential of the State tracts is related to the underlying geology. Coal exists under the eastern edge of the reservation, particularly in the Tongue River Member of the Fort Union Formation. Oil and gas could exist virtually anywhere on the reservation and several active oil fields produce in the Ash Creek, Soap Creek, Lodgegrass, and Grey Blanket Creek areas. Sand and gravel is available in the alluvium along the streams and rivers. Some geologic units have medium to high potential for bentonite, gypsum, clinker (fire baked shale from burnt coal beds, also locally known as scoria) and limestone. The State has no subsurface ownership on any of the reservation parcels, so it is not giving up any potential mineral values, nor is it gaining any in

this exchange.

3.2.4 Surface Water Rights

Table 3-15 identifies water rights on the 59 State tracts within the Crow Reservation that are involved in this exchange. Twenty-two of the 59 tracts have no water rights recorded on them.

Because the traditional pattern of grazing involves pasture units much larger than the State parcels, circumstances arise where the water right on a State parcel can be critical to the use not only of the State lease, but also of the surrounding non-State grazing leases. The same is true when a State parcel does not have water, but depends on a water source on a nearby lease to make it fully useable for grazing. Although these impacts are discussed in the impact evaluation section of the environmental assessment, not enough

Table 3-15 Water Rights on State Land in the Phase III CBSA Exchange

Legal Description	Tract Identifier	Total Acres	Water Rights ²⁹	Type of Use
S2NW4, S2, Sec. 4 T1S R28E	Pryor Creek	400	43E-C-037505, C-037504	Stock Water
Sec. 16 T1S R28E	Broken Leg Creek	640	43E-W-047495	Stock Water
Sec. 36 T2S R27E	East Buckeye Creek	640	43E-W-029812	Stock Water
Lots 5-10, E2E2, SW4SE4, Sec. 36, T3S R25E	Stratford Hill	324.35	43E-W-008254	Stock Water
Sec. 16, T3S R27E	Magpie Coulee	640	43E-W137382, P-037133	Stock Water

²⁹ Water rights denoted with an * have been filed in the name of the lessee, but are considered by the state to be state water rights appurtenant to the state tracts.

Table 3-15 Water Rights on State Land in the Phase III CBSA Exchange

Legal Description	Tract Identifier	Total Acres	Water Rights ²⁹	Type of Use
Sec. 36, T3S R27E	Birdhead Creek	640	NO RIGHTS	
Lots 1-4, S2N2, S2 Sec. 1, T4S R28E	Woody Mountain	642.47	43P-W-029806	Stock Water
Lots 1-4, S2N2, S2 Sec. 4, T4S R28E	West Fork Woody Creek	646.62	43P-W-029807, W-137402	Stock Water
E2, Sec. 10, T2S R32E	Cottonwood Creek	320	43P-W-042631	Stock Water
W2, SE4, Sec. 11, T2S R32E	Cottonwood Creek	480	*43P-C-069493, P-037132, W-042632	Stock Water
Sec. 22, T3S R30E	Little Woody Creek	640	*43P-W-183813	Stock Water
Sec. 23, T3S R30E	Little Woody Creek	640	*43P-W-183813	Stock Water
Lots 1-7, S2NE4, SE4NW4, E2SW4, SE4, Sec. 6, T3S R31E	Big Woody Creek	625.20	43P-W-013585	Stock Water
Lots 1-4, E2, E2W2, Sec. 7, T3S R31E	Big Woody Creek	624.02	*43P-W-183814	Stock Water
Sec. 24, T4S R30E	Beauvais Creek	640	NO RIGHTS	
NE4, Sec. 22, T4S R31E	Lower Beauvais Creek	160	43P-W-137363	Stock Water
SE4, Sec. 22, T4S R31E	Lower Beauvais Creek	160	NO RIGHTS	
NE4, Sec. 23, T4S R31E	Lower Beauvais Creek	160	NO RIGHTS	
Sec. 9, T5S R30E	Muddy Creek	640	*43P-W-183994, W-137356	Stock Water
Lots 1-4, S2N2, S2 Sec. 3, T5S R31E	Hay Coulee	647.20	NO RIGHTS	
N2, SW4, Sec. 21, T5S R31E	Camp Four	480	NO RIGHTS	
NW4, Sec. 28, T5S R31E	Camp Four	160	43P-W-035062	Stock Water
N2S2, Sec. 1, T6S R32E	Lower Soap Creek	160	NO RIGHTS	
Sec. 10, T6S R33E	Cottonwood Coulee	640	*43P-W-184984, *W-184983, W-112077, W-112076	Stock Water
SE4, Sec. 22, T6S R33E	Mission Coulee	160	*43P-W-184996, W-112075	Stock Water
S2, Sec. 15, T6S R34E	N. Fork Good Luck Creek	320	NO RIGHTS	
Sec. 16, T6S R34E	Rotten Grass Divide	640	43O-W-025011	Stock Water
E2, Sec. 8, T6S R35E	Good Luck Creek	320	43O-W-112091	Stock Water
W2NW4, W2SE4, SW4, Sec. 9, T6S R35E	Good Luck Creek	320	NO RIGHTS	
S2NE4, S2, Sec. 8, T7S R28E	Dry Head Creek	400	43P-W-137379, W-137378, *W-185502	Stock Water Irrigation 10 ac.
S2NE4, E2SW4, SE4, Sec. 9, T7S R28E	Dry Head Creek	320	43P-W-137380	Stock Water
S2N2, S2, Sec. 10, T7S R28E	Dry Head Creek	480	*43P-W-187871, *W-187864, W-011061	Stock Water
S2, Sec. 25, T7S R32E	Dry Soap Creek	320	*43P-W-183568, *W-183554, W-137377, W-112078	Stock Water
SE4, Sec. 26, T7S R32E	Dry Soap Creek	160	NO RIGHTS	
NE4SE4, S2SW4, SE4, Sec. 32, T7S R32E	Soap Creek	280	*43P-W-183569, W-137371	Stock Water
NE4, Sec. 36, T7S R32E	Dry Soap Creek	160	NO RIGHTS	
Lots 3-4, Sec. 30, T7S R33E	Dry Soap Creek	82.43	NO RIGHTS	

Table 3-15 Water Rights on State Land in the Phase III CBSA Exchange

Legal Description	Tract Identifier	Total Acres	Water Rights ²⁹	Type of Use
S2, Sec. 29, T7S, R33E	Dry Soap Creek	320	NO RIGHTS	
NW4NW4, Sec. 16, T7S R34E	Lower Lodgegrass Creek	40	NO RIGHTS	
Sec. 36, T7S R34E	Alligator Creek	640	43O-W-112082, W112081, W-112080	Stock Water
Lot 4, Sec. 36, T7S R35E	Halfway Creek	28.88	NO RIGHTS	
NW4, Sec. 13, T7S R36E	Little Owl Creek	160	NO RIGHTS	
Lot 10, SW4SW4, Sec. 1, T7S R38E	Indian Creek	84.85	NO RIGHTS	
S2SE4, Sec. 2, T7S R38E	Indian Creek	80	NO RIGHTS	
Lots 5-6, Sec. 12, T7S R38E	Indian Creek	83.45	42A-W-188693	Stock Water
S2, Sec. 12, T8S R34E	Crazy Creek	320	NO RIGHTS	
NW4, Sec. 13, T8S R34E	Crazy Creek	160	NO RIGHTS	
E2, SW4, Sec. 14, T8S R34E	Crazy Creek	480	43O-W-025010	Stock Water
NW4NW4, Sec. 16, T8S R35E	Wyola	40	NO RIGHTS	
NW4SE4, S2SE4, Sec. 16, T8S R37E	Bear Creek	120	43O-W-137368	Stock Water
S2, Sec. 20, T9S R33E	Dry Fork Coulee	320	43O-W-137376, W-137375, C-025012	Stock Water
Lots 1-2, E2NW4, NE4, Sec. 30, T9S R33E	Dry Ridge	315.67	43O-W-025013, W-137362, C-037496	Stock Water
Lots 3-4, E2SW4, SE4, Sec. 30, T9S R33E	Dry Ridge	315.89	43O-W-137362, C-037496	Stock Water
Lots 1-2, E2NW4, NE4, Sec. 31, T9S R33E	Dry Ridge	316.88	43O-W-137361	Stock Water
SW4SW4, E2SE4, Sec. 16, T9S R34E	Black Gulch	120	NO RIGHTS	
NE4, NE4SE4, Sec. 18, T9S R34E	Sport Creek	200	43O-W-137365	Stock Water
S2NE4, SE4, Sec. 20, T9S R34E	Black Gulch	240	43O-W-025015	Stock Water
NW4NW4, E2, S2NW4, SW4, Sec. 21, T9S R34E	Black Gulch	600	43O-W-025017, W-025016	Stock Water
NE4, Sec. 13, T9S R36E	Owl Creek	160	43O-W-137366	Stock Water

information was available to individually characterize the impact to each State tract.

3.2.5 Vegetation

The Montana Vegetation Types map³⁰ lists five vegetation types on the Crow Reservation. Lodgepole pine-Douglas-fir forest occurs in the Bighorn Mountains and in the foothills north of the Pryor Mountains. Eastern Montana ponderosa pine forest occurs in the Wolf

Mountains and on a small portion of the Crow reservation immediately southeast of Billings. Four State parcels fall within this vegetation type boundary. One parcel is represented by Ponderosa pine savannah, which occurs in the eastern edge of the reservation. The Central Grassland vegetation type occurs in the vicinity of Hardin and extends about 20 miles east and west and about 15 miles up the Bighorn and Little Bighorn drainages. Two parcels are in this vegetation type.

Payne, G.E., 1973 *Vegetative Rangeland Types in Montana*, Montana Agricultural Experiment Station, Montana State University, Bozeman.

Most of the lands involved in the third exchange fall into the Foothill Grassland type, which covers the rest of the reservation. Table 3-16 shows the State lands that fall in each vegetative type and the species that typically occur.

3.2.5.1 Rare Plants

Rare plants have not been identified on most of the State lands that are proposed for exchange, however, one 1967 observation of Yellow Bee Plant (*Cleome lutea*) is either on or peripheral to the Dry Head Creek

Table 3-16 Vegetative Type Characteristics for State Lands (distinguishing species in bold)

Table 3-16 Vegetative Type Characteristics for State Lands (distinguishing species in bold)				
Central Grassland				
Tracts/Parcels	Grasses	Forbs	Shrubs	Trees
Cottonwood Creek Big Woody Creek	Blue Grama Western Wheatgrass Needle-and-thread Sandberg Bluegrass Green Needlegrass Bluebunch Wheatgrass Plains Reedgrass Prairie Junegrass Plains Muhly Threadleaf Sedge Needleleaf Sedge	Fringed Sagewort Broom Snakeweed Phlox Wild Buckwheat Scarlet Globemallow	Sagebrush Plains Pricklypear	Absent or Occasional
Foothills Grassland				
Tracts/Parcels	Grasses	Forbs	Shrubs	Trees
East Buckeye Creek Magpie Coulee Stratford Hill Birdhead Creek W. Fork Woody Creek Woody Mountain Little Woody Creek Beauvais Creek Lower Beauvais Creek Muddy Creek Hay Coulee Camp Four Dry Head Creek Lower Soap Creek Cottonwood Coulee Mission Coulee Rotten Grass Divide N. Fork Good Luck Creek Good Luck Creek Soap Creek Dry Soap Creek Lower Lodgegrass Creek Alligator Creek Halfway Creek Little Owl Creek Crazy Creek Wyoa Dry Ridge Dry Fork Coulee	Bluebunch Wheatgrass Western Wheatgrass Idaho Fescue Sheep Fescue Needle-and-thread Mountain Brome Pumpey Brome Thickspike Wheatgrass Bluegrass Sandberg Bluegrass Prairie Junegrass Green Needlegrass Blue Grama	Western Yarrow Clubmoss Lupine Phlox	Douglas Hawthorne Saskatoon Serviceberry Western Chokeberry Russet Buffaloberry Rose	Quaking Aspen

Table 3-16 Vegetative Type Characteristics for State Lands (distinguishing species in bold)

Sport Creek Black Gulch				
Ponderosa Pine Savannah				
Tracts/Parcels	Grasses	Forbs	Shrubs	Trees
Indian Creek	Western Wheatgrass Bluebunch Wheatgrass Blue Grama Sandberg Bluegrass Needle-and-thread Little Bluestem Buffalograss Prairie Junegrass Indian Ricegrass Idaho Fescue Sideoats Grama	Phlox Lupine Wild Buckwheat	Skunkbrush Sumac Common Snowberry Plains Pricklypear	Ponderosa Pine Rocky Mountain Juniper
Eastern Montana Ponderosa Pine Forest				
Tracts/Parcels	Grasses	Forbs	Shrubs	Trees
Pryor Creek Broken Leg Creek Bear Creek Owl Creek	Needle-and-thread Blue Grama Little Bluestem Western Wheatgrass Sandberg Bluegrass Prairie Junegrass Bluebunch Wheatgrass Sideoats Grama Threadleaf Sedge Needleleaf Sedge Bluegrass	Phlox Wild Buckwheat Lupine	Skunkbrush Sumac Western Snowberry	Ponderosa Pine Rocky Mountain Juniper

tract. The State lands may, in some cases, provide habitat conditions that would be suited to some of the rare plants that occur or which have historically occurred in the area. Table 3-17 lists those rare plants known to have occurred within a ten-mile radius of the State lands that are evaluated for this exchange.

Sweetwater Milkvetch (*Astragalus aretioides*) occurs on limestone outcrops near Bighorn Canyon within 10

miles of the Muddy Creek and Camp Four tracts. Platte cinquefoil (*Potentilla plattensis*) occurs in the Pryor Mountains within 10 miles of the Dry Head Creek tract, and Yellow bee plant, mentioned earlier, occurs either on or immediately adjacent to the same tract.

Table 3-17 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur on Phase III State Exchange Lands (Lesica and Shelly 1991; MNHP Database 2000)

Table 3-17 Endangered, Threatened, and Sensitive Plant Species Known or with Potential to Occur on Phase III State Exchange Lands (Lesica and Shelly 1991; MNHP Database 2000)						
Species Common Name	USFWS	USFS/BLM	Global/State	Habitat Type	Habitat Present on State leases	Flowering/fruiting Phenology
<i>Astragalus aretinoides</i> Sweetwater Milkvetch	None	None W	G4/S2	Limestone soils on exposed ridges 4,000-7,800 ft	Unknown	June/July
<i>Cleome lutea</i> Yellow Bee Plant	None	None W	G5/S1	Open sandy soils of sagebrush steppe 4,000-4,600 ft.	Yes	June/July
<i>Potentilla platensis</i> Platte Cinquefoil	None	None W	G4/S1	Grasslands and sagebrush steppe 6,000-8,000 ft.	Unknown	June

USFS Key:

W - Watch species

S - Sensitive species

Global/State Key: G denotes Global rank; S denotes State rank

G4 - Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.

G5 - Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.

S1 - Critically imperiled in State because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extirpation from the State.

S2 - Imperiled in State because of rarity (6 to 20 occurrences), or because of other factors demonstrably making it very vulnerable to extirpation from the State.

Other Codes appended to Global Rank:

Q - Taxonomic question or problems involved, more information needed.

T - Rank for a sub-specific taxon appended to global rank for full species.

3.2.5.2 Noxious Weeds

Noxious weeds are usually exotic plants that proliferate and reduce the value of land for agriculture, forestry, livestock, wildlife, and other beneficial uses. Noxious weeds spread rapidly, out compete most native species and have at least some of the following characteristics:

1. Continuous seed production during the growing season
2. Highly efficient seed dispersal
3. Persistent banks of seeds or seedlings
4. Capability for growth in adverse climates and soils
5. Capability to reproduce through seeds, sprouts, and rhizomes
6. Few natural controls ^{31 32}

Several noxious weeds are known to be established on the Crow Reservation. Spotted knapweed occurs as isolated infestations along Interstate 90 near Hardin

and the Wyoming border; near Fort Smith; along the Edgar-Pryor road; and along Highway 212 near the eastern boundary of the reservation. Leafy spurge occurs west and southwest of Pryor, near the western edge of the reservation, and in the Lodgegrass and Wyola areas. Resource specialists with the Tribe have indicated that Russian knapweed, dalmatian toadflax, sulfur cinquefoil, hounds tongue, Canada thistle, hoary cress, common burdock and field bindweed occur either on or adjacent to some of the State exchange tracts.

No known noxious weed infestations occur on the State lands, but some parcels may have non-noxious weed infestations related to grazing pressure or favorable habitat conditions. No specific weed problems were identified during site inspections of the parcels in June 1999, but the survey was not done specifically for noxious weed identification purposes.

³¹ Montana Department of Agriculture, 1981, Weed Training Manual, Helena, MT.

³² McDonald, P. and C. Tappeiner, 1986. "Weeds," Journal of Forestry, 84(10):34-37.

3.2.6 Wildlife Habitat and Fisheries

With its varied topography, the Crow Reservation provides a wide variety of habitat for a number of species. There are 64 small mammal species known to exist on the reservation. Ten large mammals, including mountain lion, black bear, elk, white-tailed deer, mule deer, and moose also live on the reservation. Seasonally, there are as many as 261 different bird species. Five amphibians and 15 reptiles are known to occur on the reservation.³³

The State lands on the reservation provide excellent habitat suitable for antelope, mule deer, and for some upland game birds. Some of the stock water ponds provide seasonal waterfowl habitat. Generally, these habitats are little used by game species because of year-round hunting by Crow tribal members, combined with no bag limits, and relatively easy 4-wheel drive access.

There are excellent fisheries in the Bighorn River, and fair to good fisheries in the Little Bighorn and other perennial streams. Table 3-18 provides a list of perennial streams that cross State lands.

3.2.6.1 Threatened and Endangered Species

The Crow reservation provides historic habitat for grizzly bear, wolf, and black-footed ferret, although none of these species presently exist there. Occasional bald eagle and peregrine falcon use occurs on the reserva-

tion, but none of the State lands involved in the exchange have been linked to this occasional use.

There are no known occurrences of threatened or endangered species on any of the State lands involved in this exchange proposal. None of the lands involved have any habitat critical to any threatened or endangered species. One species of special concern, the spotted bat (*Euderma maculatum*) occurs in the Bighorn Canyon vicinity, which is within 4 miles of the Camp Four tract and within six miles of the Muddy Creek tract. Habits of spotted bats are not well known, but they may forage for food as far away as these tracts. In addition, two other species designated with BLM special status occur on or near some State lands in this exchange. These include a pure strain of Yellowstone cutthroat trout (*Oncorhynchus clarki bouleai*) found in Dry Head Creek and the Meadow jumping mouse (*Zapus hudsonius*) located along the Little Bighorn River near the Sport Creek and Black Gulch tracts.

3.2.7 Recreation

Due to lack of access (See Access), there is little, if any, recreational use on most of these State lands. There may be some use of the lands by tribal members for hunting or other purposes. Six State parcels accessible by county roads include Stratford Hill, Dry Head Creek (Sections 9 and 10), Rotten Grass Divide, Hay Coulee, Dry Soap Creek (Section 29), and Dry Fork Coulee. Although accessible, these parcels did not show any evidence of extensive public use during field inspections in June 1999.

Table 3-18 State Lands crossed by Perennial Streams in the Phase III Exchange

Table 3-18 State Lands crossed by Perennial Streams in the Phase III Exchange				
State Tract	Stream	Miles on Parcel	Fishery Present	Public Access
Muddy Creek	Muddy Creek	.25	No	No
Dry Head Creek	Dry Head Creek	.50	Yes	No
Soap Creek	Soap Creek	.50	Yes	No
Dry Ridge	Lodge Grass Creek	.20	Yes	No
	Horse Ridge Canyon	.90	Unknown	No
Sport Creek	Sport Creek	.40	Yes	No
Owl Creek	Owl Creek	.30	Yes	No

Crow Tribe Resource Development Technical Reports, Oct. 1977, "Wildlife", prepared by Rocky Mountain Research Corporation, p 5. 1 to 5-34.

3.2.8 Cultural Resources

A class 1 survey (literature review) of the State lands reveals three unrecorded cultural resource sites involving stone cairns, stone circles and bison kill sites on the Dry Head Creek tract. No sites were identified on any of the other State tracts. Under the Programmatic Agreement for Cultural Resources, a professional cultural resource inventory and evaluation will only be necessary if the agency ultimately receiving title to the parcels proposes a land use change that would endanger potential cultural resources.

3.2.9 Access

With the exception of six parcels crossed by county roads noted earlier in the recreation section, the Phase III State lands on the Crow Reservation do not have legal public access. Most of these lands are surrounded by a combination of fee (private) lands, Tribal lease lands or individual Tribal allotments. Tribal members may have access to the State lands across the Tribal lease lands or allotted lands and fee owners can reach these lands from their adjacent ownership, but the lands are not legally accessible to the general public.

In almost all cases except for the tracts crossed by county roads, primitive roads and four-wheel drive tracks provide access to the State parcels. However, these roads are considered private and provide access exclusively to the lessee or are used cooperatively by adjacent landowners and lessees to reach their respective lands. In some cases, a written easement or right-of-way may have been granted while in other cases access may be by common consent by the lessee and adjacent landowners.

3.2.10 Socioeconomics

3.2.10.1 Timber and Grazing Revenue

There are no commercial timberlands on the State lands involved with this exchange. Grazing, cultivated cropland and feedlot revenues are the only sources of

income from these State lands at this time. Table 3-19 summarizes the revenue producing status of the State lands in 2000. Overall, on a dollars/acre/year basis, these lands will produce an average of \$1.82 per acre in 2000, or \$37,445.81. Table 3-19 shows that several leases are substantially higher than the minimum AUM rates because of competitive bidding for the leases. Leases for the tracts with minimum rates produce revenue averaging about \$1.00/acre/year. This is similar to other State lands off the reservation, but is substantially less than the market for private grazing on the Crow Reservation, which may go as high as \$5.00 per acre (about \$20.00/AUM).³⁴

Revenues from grazing and timber harvested from common school trust lands are considered "distributable revenues." That is, 95 percent of these receipts flow directly to the State general fund where they are distributed through the school equalization account for the maintenance of the common schools. The remaining 5 percent is deposited into the permanent school trust. Figure 3-1 shows how these revenues are allocated. Revenue produced from the lands acquired in the exchange must be equal or greater than the revenue produced from the exchanged lands in order for the Land Board to approve the exchange. In other words, when considering the entire exchange (Phase I to III), acquired lands must be capable of producing each year, over the long-term, at least as much as being produced annually by the State lands in the CBSA exchanges.

3.2.10.2 Payment in Lieu of Taxes

Since Big Horn and Yellowstone counties do not have more than six percent State ownership, they receive no equalization payments from the State. This exchange would not change that status.

Equalization payments made by the State are similar to the Payment in Lieu of Taxes (PILT) payment that the federal government makes to counties with federal ownerships, but no State payment is made unless the State land base exceeds six percent of the total land base of a county.

³⁴ Information provided by the BIA and Crow Tribe indicates that, depending on competition for leases, tribal lease rates may vary from \$1.00 to as high as \$10.00 per acre (or about \$4.00 to \$40.00/AUM). These extremes are relatively infrequent and \$5.00 per acre was considered more indicative of the actual market for both tribal and private leases.

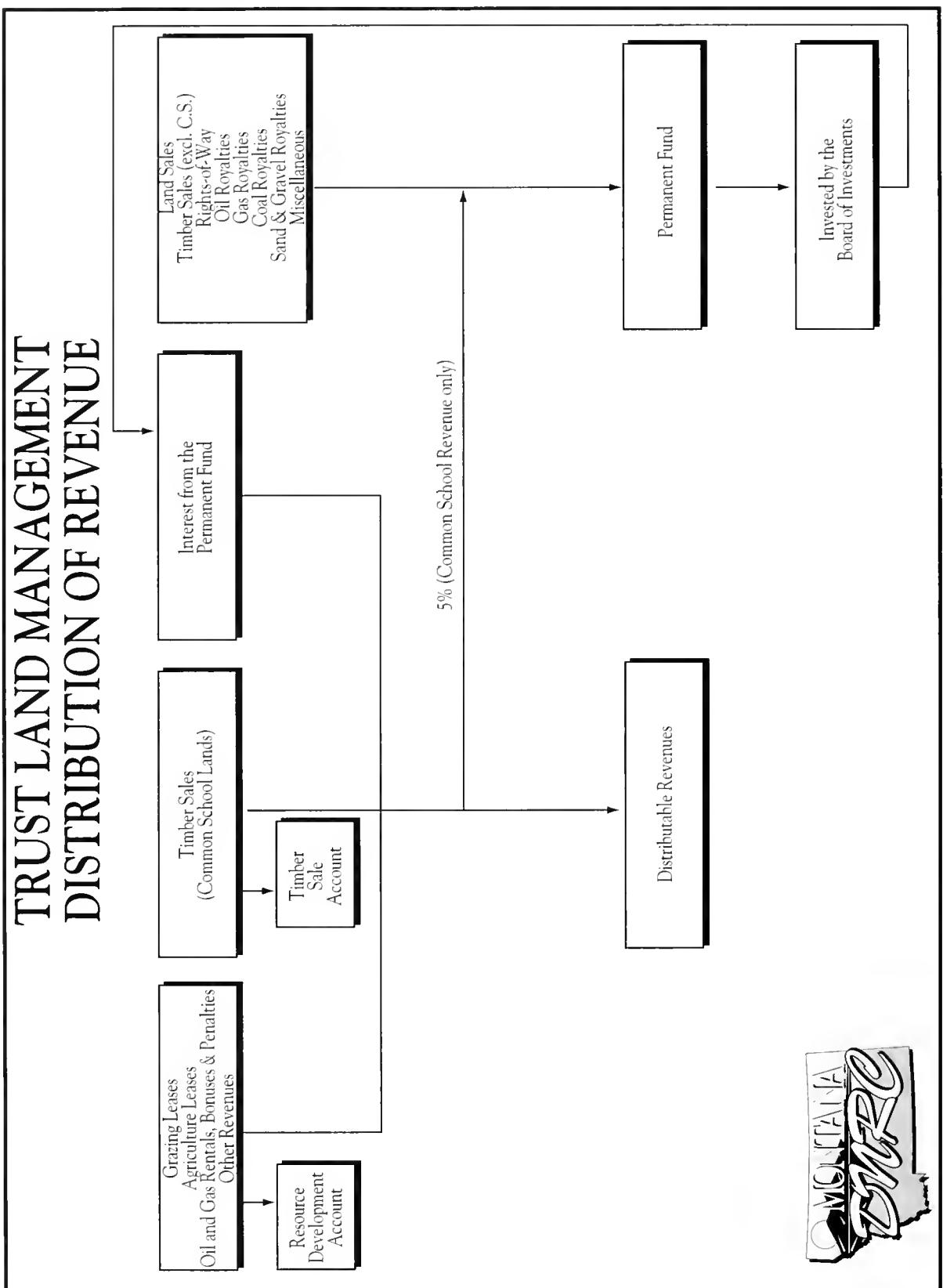
The final result of the land exchange will be the transfer of title of the State lands to the federal government to be held in trust by the Bureau of Indian Affairs for the Crow Tribe. Since the federal govern-

ment does not make PILT payments for Indian trust lands, there will be no net change in funding of local governments in Big Horn or Yellowstone counties as a result of this exchange.

Table 3-19 Revenues in 2000 from State Lands Proposed for Exchange (in Dollars)

Parcel Identity	State Revenue Sources					Revenue Recipients	\$/Acre/Year
	Grazing AUM's	AUM Rate	Cultivation	Other	Total Revenue		
Pryor Creek	136	\$ 3.73		\$500.00	\$ 1,007.28	\$ 1,007.28	\$ 2.52
Broken Leg Creek	107	\$ 3.73			\$ 399.11	\$ 399.11	\$ 0.62
East Buckeye Creek	138	\$ 4.17			\$ 575.46	\$ 575.46	\$ 0.90
Stratford Hill	76	\$ 4.17			\$ 316.92	\$ 316.92	\$ 0.98
Magpie Coulee	112	\$ 4.17			\$ 467.04	\$ 467.04	\$ 0.73
Birdhead Creek	74	\$ 4.17			\$ 308.58	\$ 308.58	\$ 0.48
Woody Mountain	80	\$ 4.17			\$ 333.60	\$ 333.60	\$ 0.52
West Fork Woody Creek	113	\$ 4.17			\$ 471.21	\$ 471.21	\$ 0.73
Cottonwood Creek	180	\$ 3.73			\$ 671.40	\$ 671.40	\$ 0.84
Little Woody Creek	296	\$ 4.17			\$ 1,234.32	\$ 1,234.32	\$ 0.96
Big Woody Creek	273	\$ 4.17			\$ 1,138.41	\$ 1,138.41	\$ 0.91
Beauvais Creek	171	\$ 4.17			\$ 713.07	\$ 713.07	\$ 1.11
Lower Beauvais Creek	78	\$ 4.72	\$2,790.18		\$ 3,158.28	\$ 3,158.28	\$ 6.58
Muddy Creek	191	\$ 4.17			\$ 796.47	\$ 796.47	\$ 1.24
Hay Coulee	105	\$ 3.73	\$1,627.93		\$ 2,019.58	\$ 2,019.58	\$ 3.12
Camp Four	134	\$ 3.85			\$ 516.10	\$ 516.10	\$ 0.81
Lower Soap Creek	43	\$ 4.17			\$ 179.31	\$ 179.31	\$ 1.12
Cottonwood Coulee	183	\$ 3.73			\$ 682.59	\$ 682.59	\$ 1.07
Mission Coulee	52	\$ 4.17			\$ 216.84	\$ 216.84	\$ 1.36
N. Fork Good Luck Creek	112	\$ 14.00			\$ 1,568.00	\$ 1,568.00	\$ 4.90
Rotten Grass Divide	180	\$ 14.00			\$ 2,520.00	\$ 2,520.00	\$ 3.94
Good Luck Creek	208	\$ 15.39			\$ 3,201.12	\$ 3,201.12	\$ 5.00
Dry Head Creek	275	\$ 4.17			\$ 1,146.75	\$ 1,146.75	\$ 0.96
Dry Soap Creek	309	\$ 15.55			\$ 4,806.30	\$ 4,806.30	\$ 4.61
Soap Creek	83	\$ 3.73			\$ 309.59	\$ 309.59	\$ 1.11
Lower Lodgegrass Creek	13	\$ 4.17			\$ 54.21	\$ 54.21	\$ 1.36
Alligator Creek	201	\$ 4.17			\$ 838.17	\$ 838.17	\$ 1.31
Halfway Creek	11	\$ 4.17			\$ 45.87	\$ 45.87	\$ 1.59
Little Owl Creek	51	\$ 4.17			\$ 212.67	\$ 212.67	\$ 1.33
Indian Creek	70	\$ 12.50			\$ 875.00	\$ 875.00	\$ 3.52
Crazy Creek	330	\$ 8.48			\$ 2,798.40	\$ 2,798.40	\$ 2.92
Wyola	15	\$ 4.17			\$ 62.55	\$ 62.55	\$ 1.56
Bear Creek	32	\$ 3.73			\$ 119.36	\$ 119.36	\$ 0.99
Dry Fork Coulee	100	\$ 8.41			\$ 841.00	\$ 841.00	\$ 2.63
Dry Ridge	241	\$ 5.28			\$ 1,273.33	\$ 1,273.33	\$ 1.34
Sport Creek	280	\$ 4.17			\$ 1,167.60	\$ 1,167.60	\$ 1.22
Black Gulch	58	\$ 4.17			\$ 241.86	\$ 241.86	\$ 1.21
Owl Creek	38	\$ 4.17			\$ 158.46	\$ 158.46	\$ 0.99
Total State Parcels	5149	\$ 5.68	\$4,418.11	\$500.00	\$37,445.81	\$37,445.81	\$ 1.82

Figure 3-1 Trust Lands Revenue Flow Chart



3.2.10.3 Land Values

The appraisal of State lands on the Crow Reservation shows their highest and best use continuing as grazing lands. The total value of the lands, as established by a comparative sales appraisal, is \$2,866,599.00. In addition, improvements on these lands were valued separately because of the necessity of compensating the current lessee for authorized improvements as a condition of the exchange. Improvements on these lands totaled \$44,752.00. Table 3-20 shows the values for the lands on the Crow Reservation at the time of appraisal.

3.2.11 Hydrologic and Soil Resources

Except for a few tracts, all of the drainages on the State lands are intermittent drainages and are usually dry most, if not all, of the year. Table 3-18, presented earlier, summarizes the perennial drainages and the stream miles on the State lands. Small stock water reservoirs, springs and ponds on many of the State parcels may provide some aquatic habitat for waterfowl, frogs, turtles, and aquatic insects. Most of these reservoirs evaporate in dry years, so no fisheries are supported. Table 3-15, also presented earlier, indicates which parcels have stock water available.

Intense local thunderstorms during summer and "chinook" winds that rapidly melt snow cover in winter can lead to runoff in these intermittent drainages. Major runoff can be accompanied by severe erosion and gullying, particularly on State lands underlain by erodible shales. Some lands have "badlands" developing where poor soils, little vegetation, and occasional, high intensity runoff occurs.

There is a complex variety of separately mapped units of different soil types on the State parcels. In general, most of the soils on the State lands have developed in place or "in situ" on the underlying geologic formations, except for relatively small areas where alluvial and terrace soils are deposited along drainages. Table 3-21 shows which tracts fall into generalized soil groups.

The high percentage of silt and clay content in underlying shales produces soils that are clayey to loamy and which have good water holding capacity. High clay content inhibits rapid infiltration of water, so short duration precipitation events tend to only wet the surface layer and not penetrate to any depth. This makes driving access on unimproved roads nearly impossible when soils are wet and is responsible for the tendency to have runoff, resulting in gullying. Soils developed over more sandy units tend to have loamy characteristics, take on water faster and dry out faster and are not as prone to gully and badlands formation. Nearly all of the soils on the State lands are more conducive to native grazing than farming, however, suitable soils have been cultivated to raise dryland grain and hay crops on small portions of some parcels where it is economical to do so. Lands that have been cultivated are indicated in Table 3-20 where parcels are separated into range and cropland for appraisal purposes. Tract identifiers with (crop) following the tract name indicate cultivated portions of the tract.

Table 3-20 Appraised Value of State Lands in CBSA Phase III Exchange

Table 3-20 Appraised Value of State Lands in CBSA Phase III Exchange					
Tract Identifier	County	Acres	Improvements	Price/Acre	Land Value
Pryor Creek (range)	YE	296	\$ 4,000.00	\$ 100.00	\$ 29,600.00
Pryor Creek (crop)	YE	104		\$ 375.00	\$ 39,000.00
Broken Leg Creek	YE	640		\$ 110.00	\$ 70,400.00
East Buckeye Creek	YE	640		\$ 100.00	\$ 64,000.00
Stratford Hill	YE	324.35	\$ 8,502.00	\$ 100.00	\$ 32,435.00
Magpie Coulee	YE	640	\$ 6,400.00	\$ 120.00	\$ 76,800.00
Birdhead Creek	YE	640	\$ 8,900.00	\$ 100.00	\$ 64,000.00
Woody Mountain	YE	642.47	\$ 2,800.00	\$ 100.00	\$ 64,247.00
West Fork Woody Creek	YE	646.62		\$ 100.00	\$ 64,662.00
Cottonwood Creek	BH	320	\$ 5,825.00	\$ 110.00	\$ 35,200.00
Cottonwood Creek	BH	480	\$ 6,550.00	\$ 110.00	\$ 52,800.00
Little Woody Creek	BH	640		\$ 120.00	\$ 76,800.00
Little Woody Creek	BH	640		\$ 120.00	\$ 76,800.00
Big Woody Creek	BH	625.2		\$ 120.00	\$ 75,024.00
Big Woody Creek	BH	624.02		\$ 120.00	\$ 74,882.00
Beauvais Creek	BH	640		\$ 130.00	\$ 83,200.00
Lower Beauvais Creek	BH	160		\$ 130.00	\$ 20,800.00
Lower Beauvais Creek (range)	BH	57.7		\$ 120.00	\$ 6,924.00
Lower Beauvais Creek (crop)	BH	102.3		\$ 375.00	\$ 38,363.00
Lower Beauvais Creek (range)	BH	124.6		\$ 120.00	\$ 14,952.00
Lower Beauvais Creek (crop)	BH	35.4		\$ 375.00	\$ 13,275.00
Muddy Creek	BH	640	\$ 1,925.00	\$ 130.00	\$ 83,200.00
Hay Coulee (range)	BH	403.7		\$ 130.00	\$ 52,481.00
Hay Coulee (crop)	BH	243.5		\$ 375.00	\$ 91,313.00
Camp Four (range)	BH	388.7		\$ 130.00	\$ 50,531.00
Camp Four (crop)	BH	91.3		\$ 375.00	\$ 34,238.00
Camp Four	BH	160		\$ 120.00	\$ 19,200.00
Lower Soap Creek	BH	160		\$ 155.00	\$ 24,800.00
Cottonwood Coulee	BH	640		\$ 160.00	\$ 102,400.00
Mission Coulee	BH	160		\$ 160.00	\$ 25,600.00
N. Fork Good Luck Creek	BH	320		\$ 160.00	\$ 51,200.00
Rotten Grass Divide	BH	640		\$ 135.00	\$ 86,400.00
Good Luck Creek	BH	320		\$ 160.00	\$ 51,200.00
Good Luck Creek	BH	320		\$ 160.00	\$ 51,200.00
Dry Head Creek	BH	400		\$ 110.00	\$ 44,000.00
Dry Head Creek	BH	320		\$ 110.00	\$ 35,200.00
Dry Head Creek	BH	480		\$ 110.00	\$ 52,800.00
Dry Soap Creek	BH	320		\$ 150.00	\$ 48,000.00
Dry Soap Creek	BH	160		\$ 140.00	\$ 22,400.00
Soap Creek	BH	280		\$ 140.00	\$ 39,200.00
Dry Soap Creek	BH	160		\$ 150.00	\$ 24,000.00
Dry Soap Creek	BH	82.43		\$ 150.00	\$ 12,365.00
Dry Soap Creek	BH	320		\$ 140.00	\$ 44,800.00
Lower Lodgegrass Creek	BH	40		\$ 150.00	\$ 6,000.00
Alligator Creek	BH	640	\$ 8,750.00	\$ 160.00	\$ 102,400.00
Halfway Creek	BH	28.88		\$ 140.00	\$ 4,043.00
Little Owl Creek	BH	160		\$ 140.00	\$ 22,400.00
Indian Creek	BH	84.85		\$ 140.00	\$ 11,879.00
Indian Creek	BH	80		\$ 140.00	\$ 11,200.00
Indian Creek	BH	83.45		\$ 150.00	\$ 12,518.00
Crazy Creek	BH	320		\$ 160.00	\$ 51,200.00
Crazy Creek	BH	160		\$ 150.00	\$ 24,000.00
Crazy Creek	BH	480		\$ 160.00	\$ 76,800.00
Wyola	BH	40		\$ 150.00	\$ 6,000.00
Bear Creek	BH	120		\$ 130.00	\$ 15,600.00
Dry Fork Coulee	BH	320		\$ 160.00	\$ 51,200.00
Dry Ridge	BH	315.67		\$ 150.00	\$ 47,351.00

Table 3-20 Appraised Value of State Lands in CBSA Phase III Exchange

Tract Identifier	County	Acres	Improvements	Price/Acre	Land Value
Dry Ridge	BH	315.89		\$ 150.00	\$ 47,384.00
Dry Ridge	BH	316.88		\$ 150.00	\$ 47,532.00
Black Gulch	BH	120		\$ 150.00	\$ 18,000.00
Sport Creek	BH	200		\$ 160.00	\$ 32,000.00
Black Gulch	BI1	240		\$ 160.00	\$ 38,400.00
Black Gulch	BI1	600		\$ 160.00	\$ 96,000.00
Owl Creek	BH	160		\$ 150.00	\$ 24,000.00
Totals/Average		20,857.91	\$ 53,652.00	\$ 145.67	\$ 2,866,599.00

Table 3-21 General Soils for State Lands Exchange Tracts

Parcels/Tracts	General Soils Description	Uses
Pryor Creek, Broken Leg Creek, East Buckeye Creek, Magpie Coulee, Birdhead Creek, Woody Mountain, West Fork Woody Creek, Cottonwood Creek, Big Woody Creek, Little Woody Creek, Beauvais Creek, Lower Beauvais Creek.	Soils of the southeastern plains include Entisols, Mollisols, and Inceptisols, with Mollisols dominating the gently rolling hills and Entisols and Inceptisols on the steeper slopes.	Rangeland and Dry Land Farming
Lower Soap Creek, Cottonwood Coulee, Mission Coulee, Rottengrass Divide, N. Fork Good Luck Creek, Good Luck Creek, Lower Lodgegrass Creek, Alligator Creek, Halfway Creek, Crazy Creek, Little Owl Creek Wyola, Indian Creek, Owl Creek.	Soils of the clayey-shale plains are primarily Aridisols and Entisols, with Entisols dominating the badlands and "breaks" along rivers.	Rangeland and Dry Land Farming
Stratford Hill, Dry Head Creek, Hay Coulee, Camp Four, Dry Soap Creek, Soap Creek, Dry Fork Coulee, Dry Ridge, Sport Creek Black Gulch	Soils of the high foothills are mostly Mollisols, with some Inceptisols. On lower foothills, benches, and terraces, the soils include Mollisols, Aridisols, and Entisols.	Rangeland and Dry Land Farming

4.0 CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

The impact analysis of the Proposed Action (also called the Exchange Alternative—see definition of Proposed action and alternatives in Section 2.0) starts from the premise that the proposed exchange will occur between public agencies and that the impacts of the exchange will stem solely from differing management policies or proposed changes in the basic land use that would occur if the exchange were completed. It also assumes that the proposed exchange process (exchange of deeds, filing of deeds, transfer of water rights, etc.) will go forward as soon as a final Land Board decision and the BLM appeals process are completed. In the case of any proposal for changing the land use of a tract, that action would be subject to additional review beyond the scope of this EA and a separate or tiered EA would have to be completed before that action could take place. In addition, the Programmatic Agreement on Cultural Resources would require a cultural survey and evaluation that meets federal standards when a land use change is proposed. Both of these processes will provide additional checks and opportunities for public comment which could modify any future proposed action. Therefore, this EA will not attempt to describe impacts for future actions which cannot be fully anticipated at this time.

Analysis of the No Action alternative will look at the consequences of not exchanging lands as proposed. The Mitigated Exchange alternative will look at various options available to the Land Board and BLM to complete the exchange but still try to mitigate some of the impacts to the various affected parties and/or resources.

As noted earlier in the environmental assessment, not all of the BLM lands will be required to equalize the value of the State land in the Phase III exchange. Under the Proposed Action or Exchange Alternative, it is the State's intent to exchange all of the remaining school trust lands acquired as a result of the 1920 Crow

Allotment Act in the Phase III exchange. Table 4-1 indicates which BLM lands the State will be proposing to acquire to equal, as nearly as possible, the value of State lands offered in exchange. The exchange of BLM lands in Table 4-1 will constitute the Exchange Alternative or Proposed Action by the State and BLM. BLM lands not included in the Exchange Alternative for Phase III, but described earlier in the Affected Environment Chapter, will be considered for the private exchange program by the BLM to meet the mandate of the CBSA to provide the Crow Tribe with lands approximately equal in value to the 44,800.74 acres the State selected on the Crow Reservation under the Crow Allotment Act of 1920. BLM will complete a separate environmental assessment for the private exchange program, but may tier to the analysis and description of surplus BLM lands included in this environmental assessment.

As shown in Table 4-1, the value of the BLM lands in the proposed exchange is equal to \$2,875,096.20. BLM, at the end of the Phase I and II exchanges owes the State \$6,101.00 in land value, resulting in a value of \$2,872,700.00 for the State land. At the end of the exchange, the State will owe BLM \$2,396.80 in exchange value for any future exchange proposals. This \$2,396.80 is about .08 percent of the value of the federal land and, as a result, will be waived in accordance with 43 CFR 2201.6 (c) and (d).

4.1 Impacts of the Proposed Action

4.1.1 General Geography, Topography and Aesthetics

The proposed action will have no affect on the general setting of any of the BLM lands, with the possible exception that a future timber sale and harvest on the Surenough/Potter Divide tract may change the viewshed, by a short-term reduction in timber volume and by changes in the age class distribution of timber. Some portions of the tract are visible from the Flatwillow Creek Road. BLM already has logged part of the tract and most of the road network is already in place. The effects of any proposed timber sale would

Table 4-1 BLM Lands Proposed for Equal Value Exchange

Table 4-1 BLM Lands Proposed for Equal Value Exchange				
Tract Identity	County	Acres	Price/Acre	Land Value
Hay Creek	Powder River	640	\$145.00	\$92,800.00
Poker Jim Gulch	Powder River	746.8	\$135.00	\$100,818.00
Butte Creek	Powder River	634.1	\$145.00	\$91,944.50
Kimball Creek	Custer	757.41	\$130.00	\$98,463.30
Cottonwood Creek	Custer	320	\$120.00	\$38,400.00
Strevell Creek	Custer	321.64	\$120.00	\$38,596.80
South Strevell Creek	Custer	640	\$120.00	\$76,800.00
N. Fork Strevell Creek	Custer	156.62	\$130.00	\$20,360.60
First Creek	Custer	619.8	\$130.00	\$80,574.00
Second Creek	Custer	640	\$120.00	\$76,800.00
Mizpah	Custer	218.97	\$145.00	\$31,750.65
Strevell/Laney Divide	Custer	640	\$120.00	\$76,800.00
South Laney Creek	Custer	320	\$120.00	\$38,400.00
Powder River	Custer	160	\$120.00	\$19,200.00
Pocochee /Adams Divide	Carter	360	\$120.00	\$46,800.00
N. Fork Dry Creek	Carter	680	\$135.00	\$91,200.00
Dry Creek	Carter	160	\$120.00	\$19,200.00
Dry Creek Ridge	Carter	320	\$120.00	\$38,400.00
Miles City Creek	Fallon	1280	\$120.00	\$153,600.00
Brush Creek	Fallon	1416.96	\$120.00	\$170,035.20
Murphy Coulee	Blaine	1276.88	\$90.00	\$114,919.20
Hogeland Ridge	Blaine	360	\$90.00	\$32,400.00
Turner South	Blaine	80	\$85.00	\$6,800.00
Turner Colony Northwest	Blaine	400	\$85.00	\$34,000.00
Turner Colony West	Blaine	600	\$85.00	\$51,000.00
North Murray Coulee	Blaine	38.8	\$85.00	\$3,298.00
Murray Coulee	Blaine	960	\$85.00	\$81,600.00
Turner North	Blaine	107.09	\$85.00	\$9,102.65
Upper Camp Creek	Phillips	160.11	\$80.00	\$12,808.80
Lower Camp Creek	Phillips	640	\$80.00	\$51,200.00
West Fork	Valley	640	\$75.00	\$48,000.00
Roanwood Valley	Valley	400	\$75.00	\$30,000.00
Mosquito Creek	Valley	320	\$75.00	\$24,000.00
Kamanski Hill	Valley	320	\$75.00	\$24,000.00
West Fork Poplar River	Valley	157.5	\$85.00	\$13,387.50
Morgan Coulee	Valley	160	\$75.00	\$12,000.00
Round Butte	Valley	320	\$75.00	\$24,000.00
Glentana South	Valley	360	\$75.00	\$27,000.00
Middle Fork	Valley	320	\$85.00	\$27,200.00
Shonkin Creek	Chouteau	40	\$300.00	\$12,000.00
Surenough/Potter Divide	Fergus	520	\$525.00	\$579,375.00
Rose / Dog Creek Divide	Fergus	240	\$125.00	\$30,000.00
Rose Creek	Fergus	320	\$125.00	\$40,000.00
Bloomfield Butte	Fergus	320	\$120.00	\$38,400.00
Whiskey Ridge West	Fergus	40	\$120.00	\$4,800.00
Taffy Creek	Fergus	80	\$100.00	\$8,000.00
Flax Coulee	Fergus	788.62	\$100.00	\$78,862.00
Taffy Ridge	Fergus	160	\$100.00	\$16,000.00
White Horse Butte	Fergus	40	\$100.00	\$4,000.00
Two Calf Creek	Fergus	320	\$100.00	\$32,000.00
N. Fork Taffy Creek	Fergus	40	\$100.00	\$4,000.00
Totals		21,561.3	\$117.39	\$2,875,096.20

have to be addressed in a separate environmental assessment.

No impacts are anticipated to the geography, topography or aesthetics of the State lands on the Crow Reservation as a result of this exchange.

4.1.2 Climate

No climate-related impacts will result from the proposed exchange.

4.1.3 Groundwater, Geology and Mineral Potential

On the BLM lands, no impacts are anticipated to groundwater, geology, or to present or future mineral potential as a result of the proposed exchange. Because BLM will retain sub-surface ownership, it is possible that unanticipated future mineral development might preclude surface uses by the State. Should oil and gas development be proposed upon these lands, the State would be given notice pursuant to the Surface Owner Damage and Disruption Compensation Act, § 82-10-501, et. seq., MCA. Should hard-rock mineral development be proposed upon these lands by any means other than hand tools, the State will be given notice pursuant to the Landowner Notification Act, §82-2-301, et. seq., MCA.

No impacts would be associated with the exchange to the State lands, as long as livestock grazing continues as the primary use of the lands. Prior to the 1920 Crow Allotment Act, the State lands were originally Tribal trust lands and subsurface ownership was retained by the Department of Interior, in trust for the Crow Tribe, when the State was granted lands on the Crow Reservation. If mineral development should occur in the future, there could be impacts to the surface uses and to groundwater (for example, with oil and gas drilling, or open pit coal mining). None of these potential uses can be anticipated at this time and future environmental assessments would be required if such development were to be proposed.

4.1.4 Surface Water Rights

With one exception, water rights on BLM lands are for stock water, waterfowl, or wildlife use from wells, stock water ponds or direct use from streams. The Powder River parcel in Custer County also has an irrigation right with it from Sheep Creek, a tributary of the Powder River. These BLM rights and uses are appurtenant to the land and would transfer to the State and continue for the purposes designated. Rights filed in the name of lessees of BLM lands could continue to be used by the lessee, but apparently would not become a State water right. The value of the BLM water rights are incorporated into the appraised value of the BLM lands and are part of the basis for the land value used in determining which lands are exchanged. Because the State will accept current BLM lessees as the lessees of record, lessees will continue to have the enjoyment of any established water rights under State management, just as they had under BLM management.

For stock water rights on State lands, where the place of use and point of diversion are the same place (for example, a stock water pond on State land on the Crow Reservation) the water right associated with that use is appurtenant to the land. This means that the water rights developed on State lands in this exchange will transfer with the parcels to the United States to be held in trust for the Crow Tribe. In most cases, the development needed to provide water to fulfill the right was done by the lessee of the State parcel. The water right becomes an improvement on the property for use and enjoyment by the lessee, but does not become the lessee's water right (See Department of State Lands v. Pettibone, 216 Mont. 361, 1985). The improvement (stock water dam) may be compensable by the party that ultimately reaps the future benefit of that improvement, which in the case of this exchange, would be the Crow Tribe. State law provides: "If any State land is exchanged on which there are improvements belonging to a lessee and some person other than the lessee is the transferee, that person shall settle with the lessee for all improvements on the land belonging to the lessee before the exchange is completed."³⁵ Appraisals of the State lands have separately appraised improvements such as stock ponds from the basis for exchange value, because it cannot be ensured that current lessees will

³⁵ MCA §77-2-206. Settlement for improvements.

continue to have full use and benefit of these improvements. The value of the improvements will become the basis for negotiations to compensate the current lessee for any improvements that are appurtenant to the land.

Current State lessees may be affected by the loss of the State lease, because the water on the State parcel may provide stock water for a much larger area than just the State lease. If the lessee loses access to the water, then his or her livestock operation may be impacted beyond the loss of the lease and the water improvements on it. They may be forced to haul water, develop new water sources (if that is possible), or may have to abandon the use of adjacent lands because of lack of stock water.

On the other hand, State tracts that depend on off-site water developments may impact future Tribal lessees in the same way if there is no access to the water developed off of the State parcel following the exchange.

4.1.5 Vegetation

The primary impact that could be anticipated following the exchange is related to future timber harvest on the BLM land known as the Surenough/Potter Divide tract. If this tract becomes State land through exchange, the State will, at some time, implement timber management actions designed to produce revenue to the school trust, reduce fuels and the risk of wildfire, and maintain sustainable habitat for wildlife. It is not anticipated that the State will acquire the Ash Creek Divide tract, nor that it would be able to economically harvest the timber on that tract if it were acquired.

Timber management on State land is guided by the State Forest Land Management Plan with its associated Resource Management Standards and Guidelines. State land ownership patterns that are not in large, contiguous blocks, such as typified by the Surenough/Potter Divide tract, are managed to restore a semblance of historical conditions. In general, a determination of the stand age class distribution and site conditions leads to the development of a silvicultural prescription. Silvicultural prescriptions (treatments) ensure potential commercial timber production over time for predicted re-entry harvests and provide for a residual forest structure of old age trees (leave trees). In this case, an initial entry is postulated in about five years, with re-

entry every 25 years, with each entry harvesting about 25 percent of the standing commercial timber. Timber volumes for each entry are based on a two percent annual growth rate. The leave tree selection is based on the form and health of the tree. Typically, the best formed and healthiest trees display the best genetic characteristics and are selected as leave trees to provide a seed source for regeneration. In certain cases, leave trees are selected because of known wildlife use (such as raptor nests and turkey roosts)

Roads developed for commercial timber harvest on State land are normally removed from service through reclamation at the completion of the sale. The soil disturbances, left unreclaimed, could create an area where noxious weeds and weedy vegetation spread. Reclamation generally involves mechanical ripping of the road surface followed by application of native seed. Erosion control measures are implemented to ensure the road surface maintains erosion control qualities. Since the Surenough/Potter Divide tract already has an extensive logging road network that is seeded to grass, relatively little additional road development and reclamation should be necessary. This tract comes with an administrative easement as part of the exchange, but does not have public access. Thus none of the roads associated with the tract would be designated routes for vehicular public access.

Each proposed future timber sale on State land is subject to the Montana Environmental Policy Act (MEPA) which mandates recognition and mitigation of environmental impacts and allows for public input. Any specific timber sale on acquired BLM lands would be subject to MEPA compliance at the time the sale is proposed.

At this time, there are no planned changes in the uses of the other BLM lands, and it is anticipated that the current BLM lessees will continue to use the lands in the same way after they become State lessees. However, it is noted that some of the BLM tracts have been entirely or partially cultivated in the past, then usually reseeded to crested wheatgrass. Many of these parcels are surrounded by cultivated agriculture and under State management, there is a possibility that the lessee will petition to convert these lands to cropland. If this occurs and is approved, then some lands would change from reseeded grassland to cropland. BLM lands with

some potential for conversion to cropland are listed in Table 4-2. A few BLM lands that were topographically suited and had suitable soils for cultivation, but which were not adjacent to other cultivated lands were not considered potential future candidates for cultivation. Generally, the State does not approve cultivation of previously unbroken lands.

The State and BLM calculate carrying capacity by different methods, and there may be some slight differences in the number of AUM's allowed under State management. Depending on the range condition, this could mean either increases or decreases in stocking levels. Generally, unless the stocking rate appears to be abnormally high or low, the State will accept the BLM stocking rate for the initial State lease term. Despite differing carrying capacity calculation methods, neither the State nor the BLM condone or permit overgrazing on their lands.

There are no planned changes in the use of the State lands for grazing and those lands presently cultivated following the proposed exchange. The only potential impacts to vegetation to the State lands resulting from the exchange would result from different grazing policies or enforcement of policies that allowed changes in the current stocking levels of livestock. This could result in either more or less grazing than presently

occurs. More grazing could result in overgrazing, which would lead to increased erosion, and might alter species composition on the State lands, including introduction and spread of weeds. Less grazing, over time, might also result in a species composition shift towards native species in proportions closer to what existed before livestock grazing was introduced.

The primary impacts to the existing lessees are the increase of AUM prices and the loss of attachment of AUM's to a fixed base. Under the existing formula, the standard minimum value for an AUM on BLM lands in 2000 is \$1.35. The State minimum fee for these lands is set at \$4.17/AUM in 2000. Lessees would also be given a 10-year lease at the time of conveyance, which would supplant the lease which is "fixed" to base property (lessee's private land holdings) under BLM regulations. At the end of the ten-year term, the lessee would have the opportunity to match any competitive bid offered on the parcel. If no competitive bid is made, the land will be offered to the present lessee at the State minimum rate for that lease term.

Grazing policies and enforcement practices are sufficiently vague when comparing the State to Tribal trust leases, that any prediction of future impacts would be purely hypothetical. It is assumed that both the State and the Tribe have vested interests in the long-term

Table 4-2 BLM Tracts with Potential Future Cultivation in CBSA Phase III

Tract Identity	County	Acres	Previously Cultivated	Suitable for Cultivation	Adjacent lands Cultivated
Mizpah	Custer	218.97	Portions	Portions	Yes
South Laney Creek	Custer	320	No	Yes	Yes
Powder River	Custer	160	Yes	Yes	Yes
Pocochee /Adams Divide	Carter	360	No	Yes	Yes
Miles City Creek	Fallon	1280	Portions	Portions	Yes
Brush Creek	Fallon	1416.96	Portions	Portions	Yes
Turner South	Blaine	80	Yes	Yes	Yes
Turner Colony Northwest	Blaine	400	Yes	Yes	Yes
Turner Colony West	Blaine	600	No	Portions	Yes
Murray Coulee	Blaine	960	No	Portions	Yes
Turner North	Blaine	107.09	Yes	Yes	Yes
Roanwood Valley	Valley	400	No	Portions	Yes
Mosquito Creek	Valley	320	No	Portions	Yes
Morgan Coulee	Valley	160	No	Portions	Yes
Rose / Dog Creek Divide	Fergus	240	No	Portions	Yes
Rose Creek	Fergus	320	No	Portions	Yes
Bloomfield Butte	Fergus	320	No	Portions	Yes

productivity of these lands. Therefore, stocking levels will probably remain similar to those levels presently on the State leases following the exchange and impacts, if any, will be negligible.

4.1.5.2 Rare Plants

Lack of a rare plant survey makes it impossible to know whether there would be impacts to rare plants on the BLM or the State parcels as a result of the exchange. However, given that land use is not expected to change, no new impacts are expected to result from the exchange. Any land use change involving conversion of the native vegetation would be subject to additional MEPA/NEPA review and compliance.

4.1.5.3 Noxious Weeds

Certain noxious weeds have a tendency to spread along travel corridors, especially vehicle trails. There is a potential for the spread of noxious weeds on any BLM tract with public access and roads that permit vehicular access. There is also the possibility of additional road development on the Surenough/Potter Divide tract in the event of a timber sale. If that occurs, additional road construction and noxious weed control would be addressed in a specific timber sale environmental assessment and through the timber sale contract.

One BLM tract (Miles City Creek) had widespread bull thistle infestations. Under BLM management, BLM normally conducts weed control. Under State management, noxious weed control is a lessee requirement, although, in some cases, the State can assist with funding to implement a weed control plan.

No noxious weeds were observed on the State parcels. However, to the extent that new roads, wheel tracks, or other vehicular access routes are required to implement the exchange (such as alternate access routes because of loss of access on a State parcel), these routes could become potential invasion routes for noxious weeds that tend to spread along travel routes (spotted knapweed, Canadian thistle, etc.).

4.1.6 Wildlife Habitat and Fisheries

To the extent grazing lands acquired from BLM will continue to be grazing lands, land uses will not change. Thus, wildlife habitat provided on these lands under BLM management will continue to provide wildlife benefits under State management. During the scoping meetings, some concerns were raised over the prospect of lands being converted from native range to cropland following the exchange with the State. Such conversions, if they occur, could have detrimental effects on wildlife dependent on native range. It is possible that a new lessee could make an application to convert native range to cropland. DNRC has a specific policy on breaking ground and evaluates each request against the criteria in the policy before granting or denying the request. The policy requires consultations with appropriate agencies, including Fish, Wildlife and Parks, and compliance with the Montana Environmental Policy Act and Montana Antiquities Act before a request can be approved. The State contemplates no conversions of rangeland to a different land use at this time. The State policy is attached as Appendix E.

The lands listed in Table 4-2, either in part or in total, have suitable topography and soils for cultivated dry land crops. Generally, under the policy on ground breaking, lands in native rangeland are not allowed to be broken, but lands that have previously been broken and reseeded, may meet the criteria and have some likelihood of being converted to cropland. Many of the lands that have been previously broken have been reseeded to crested wheatgrass, which provides some cover but is generally not considered high quality wildlife habitat. The State has a mandate to manage school trust lands to provide the maximum benefit to the common schools of Montana. Cropland returns as much as three to six times as much revenue per acre¹ year more than grazing land. Thus, over time, most of the previously broken lands will likely be converted to cropland, if the State receives conversion applications from the lessees. While dry cropland offers some wildlife benefits, the wildlife benefits of leaving the land as rangeland will be lost if these conversions occur.

Wildlife habitat would continue to be good to excellent on the State parcels on the Crow Reservation, but because of hunting policies, ease of access, and lack of escape cover, the parcels would continue to be under used by species heavily hunted by tribal members. All parcels on the reservation that are not already converted to cropland are expected to continue as native rangeland under the Tribal leasing program.

The State has no immediate plan for a timber sale on the Surenoough/Potter Divide tract, the only acquired BLM land with commercial timber, but does have a mandate to return the highest value to the school trust through responsible resource management. This mandate eventually would cause the State to attempt to sell timber on the tract. Such an action would be addressed in a separate environmental assessment. There could be both negative and positive impacts to wildlife and wildlife habitat, resulting from timber harvest on this tract. Even though this EA cannot address specific impacts of a future timber sale, the following discussion addresses some of the general impacts that might result from timber harvest.

Timber harvest on this tract could have short-term adverse impacts to many species of wildlife and particularly could harm big game security habitat. In the worst case, removal of conifer canopy could inhibit mule deer, white-tailed deer, and elk winter use and increase vulnerability during hunting season. While the tract does not have public access, it is assumed that landowners controlling access could hunt on the parcel or allow hunting access to the parcel. The impacts and their severity would depend on the amount of timber harvested, the method of harvest, the timing of the harvest, the amount of new roads, if any, and whether they are subsequently closed or remain open, and many other factors that cannot be known and will not be addressed unless the exchange actually occurs and a timber sale is proposed. Another impact related to timber harvest is that it could reduce the number of large trees used by roosting turkeys and nesting raptors.

Deferring or even stopping the harvest of timber would not guarantee that wildlife impacts might not occur. Any forested land in the dry, hot summer environment of Montana has a substantial risk of loss to fire in any

year. Although detrimental wildlife effects are associated with timber harvest, it can also benefit wildlife habitat by compartmentalizing and reducing fuels, thereby reducing the risk of large fires. Timber harvest may provide more grass, forb and shrub forage and may increase the grazing capacity of the parcel for a period of time until new timber growth again shades the under-story and restricts herbaceous growth.

Powder River is the only perennial stream with a fishery that abuts or crosses BLM lands being acquired in this exchange. The Powder River forms the eastern boundary of the Mizpah tract and the tract includes one small island and a side channel of the river. No changes are anticipated on any of the BLM lands that would have adverse effects on any fishery, stream, river, stock water pond, or wetland. Several perennial streams on State land, noted in Table 3-16, are likely to have small trout fisheries. However, nothing in the exchange will have any effect on any fishery, stream, river, stock water pond, or wetland of any State tract.

4.1.6.1 Threatened and Endangered Species

There are no known threatened or endangered species living on or dependent on either the BLM or the State parcels. Given that no immediate land use changes are anticipated by the exchange, no impacts are anticipated to any threatened or endangered species as a result of the exchange.

Prairie dogs and burrowing owls that sometimes use prairie dog holes are BLM Special Status Species and are Montana Species of Special Interest. State grazing leases contain standard language regarding the control of pests, which include prairie dogs.

4.1.7 Recreation

Recreational opportunities on the BLM lands would remain essentially the same as under BLM management. The main difference would be that a State Lands Recreational Use Permit would be required for recreational pursuits that were open to the public at no additional cost under BLM management.³⁶ The cost of

³⁶ Recreation on BLM land is not "free", since the use and management of that use is funded by federal tax dollars that every taxpayer pays, whether they seek recreation on a particular parcel, or not. Because state lands have a specific mandate to return revenue to the common schools, recreation on state land is considered a benefit that is compensable through a fee to those that actually use state land for recreation; while those who do not, pay no fee.

a permit is \$10/year/person for all individuals between 18 and 59 years of age. Persons between 12 and 17 or over 60 can get a permit for \$5. Children under 12 do not need a permit and a family permit (up to 6 members of the same household) costs \$20. Other impacts to recreationists would be the limitation of ORV travel to roads petitioned to be opened or those upon which the BLM would retain a road easement. At present, State lands can be included in Block Management programs, whereas BLM lands cannot be entered into the program without first publishing a Notice of Closure in the Federal Register. Such a notice would first require an environmental analysis to assess the impacts of such a proposal.

Some of the affected BLM lands are designated as possessing "limited access" for public recreational purposes. Limited access is generally defined as being limited to existing roads and trails, with a one-time exception for retrieval of game animals. On State lands, travel is allowed only on routes opened through a petition for travel through the area office. However, in this case, BLM intends to secure easements for any roads or trails they require open for public access as a condition of the exchange. These easements will be recorded on the deed at the time of transfer to the State. The retention of these easements would ensure these routes remain open and mitigate any impacts regarding access to adjacent BLM lands as a result of the proposed exchange. Generally, BLM will not reserve an easement for public access unless public access has already been demonstrated to exist up to the BLM boundary. For example, BLM will not secure an easement for vehicular access across BLM lands, if permission to cross private land is required to drive to the BLM parcel.

The degree of off road vehicle (ORV) use on BLM lands specifically included in this exchange is not known, but is not considered to be extensive or excessive. State lessees, like BLM lessees, are allowed any legitimate ORV use (mending fence, spraying weeds, etc.) and are not restricted like recreationists to designated routes and existing roads. Use of restricted roads by handicapped individuals is allowed on State lands for persons possessing a Department of Fish, Wildlife and Parks handicap sticker (permit to hunt from a vehicle).

Concerns have been expressed that recreational access might be restricted after the exchange by a lessee on State lands who petitions DNRC for a closure. Closures are normally only granted for a specific limited period of time for cause (e.g. extreme fire danger, risk to human health or safety).

State lands are open to camping, just as BLM lands are. However, camping on State land is limited to two days, and only within 200 feet of a legal, customary access point, while it is open for 14 days on BLM land. It does not appear that this restriction will be of great consequence, since there are no developed camp sites on the BLM lands and their use for camping appears to be minimal to non-existent. The camping restriction does not limit the continued use of State lands for other recreational purposes.

On the Crow Reservation, only the Stratford Hill, Dry Head Creek (Sections 9 and 10), Rotten Grass Divide, Hay Coulee, Dry Soap Creek (Section 29), and Dry Fork Coulee parcels are legally accessible to the public for recreational use. Since non-Indians are not allowed to hunt big game on the reservation, these parcels receive very little recreational use and that probably would not change as a result of the exchange. The State has the right to require non-Indian recreationists to hold a recreational use license when pursuing recreational activities on State school trust lands, even though they are within the bounds of a reservation. That requirement probably extends to tribal members also, but the issue becomes clouded and practically unenforceable when tribal treaty rights to hunt and fish on the reservation are taken into account. As a practical matter, because it sometimes is difficult to ascertain if someone is a tribal member, it is difficult to enforce the recreational use permit on the reservation. Exchanging these lands may result in fewer persons in this area purchasing State land recreational use licenses, but that impact is negligible in terms of the total number of licenses sold in the State.

Acquisition of BLM lands with better access and more opportunity to hunt, fish, hike, camp, birdwatch, etc., by the general public might increase the sales of recreational licenses and enhance the overall opportunity for the State to provide recreation to the general public. Enforcement would be slightly easier because the BLM lands generally will be within or near larger blocks of State land that are already being checked and because

there will be no jurisdictional and enforcement ambiguities similar to those occurring on the Crow Reservation.

4.1.8 Cultural Resources

There will be no impact to cultural resources as a result of the exchange. The State would have the same obligation as the BLM had to survey, record, and protect, if necessary, any cultural resources threatened by a proposed land use change (timber sale, conversion to cropland, or other change). The Bureau of Indian Affairs will have the same responsibility for lands that ultimately become part of the Tribal trust lands.

4.1.9 Access

There are vehicle trails or tracks on many of the BLM lands involved in the exchange. However, only four tracts (South Laney Creek, Brush Creek, Murphy Coulee, and Turner Colony West tracts) have such vehicle tracks originating directly from a public road without intervening State or private lands. All third party easements will be preserved and transferred as part of the patent or deed. Since none of these vehicle trails is necessary to secure public access to adjacent BLM lands, BLM does not intend to reserve specific public access along the vehicle tracks on these four parcels. The lessee is already granted access by the State and the State has a procedure for petitioning to open designated roads where public vehicular access is desired or required. Thus, there is probably no need to secure public vehicular access easements on any BLM tracts.

Only six State parcels are accessible by county roads on the Crow Reservation. These include Stratford Hill, Dry Head Creek (Sections 9 and 10), Rotten Grass Divide, Hay Coulee, Dry Soap Creek (Section 29), and Dry Fork Coulee. Access to all of the other State parcels requires crossing private, Tribal trust lands or individual Tribal allotments. As these State lands become Tribal trust lands through exchange, these six parcels will not be accessible to the public, except along the county road easement. Access will generally be restricted for non-Indians, except to the extent that the lessees or the public may now acquire access to these six parcels and other State parcels with permission, by easement, or by other established use rights.

Other State lands have more primitive access routes (wheel tracks, bladed access roads, etc.) that cross the parcels and tracts and provide access to other areas of the lessee's ranch operations or to adjacent owners or lessees. There is some potential that access previously enjoyed by a lessee on a State lease may be lost as a result of the exchange. If easements cannot be negotiated with the Crow tribe and this access is critical and must be maintained by some other means, there is the possibility of additional primitive road development on adjacent lands to provide this access.

4.1.10 Socioeconomics

4.1.10.1 Grazing

The impact of the exchange would be to convert BLM grazing leases to DNRC grazing leases on the former BLM tracts. Since the State will recognize any existing BLM lessee as the current lessee, entitled to a preference right under State grazing rules, there will not be any displacement of BLM lessees as a result of the exchange at least until such a time as the initial lease expires. When that occurs, and the tract comes up for competitive bid, the lessee would have to match any other bids in order to maintain his preference and authorization to use the State land. The State does have a higher AUM rate than the BLM (currently \$4.17/AUM for the State compared to the current \$1.35/AUM for the BLM) and this means that the cost of the lease will be higher under State ownership. Table 4-3 provides an overview of potential revenues from the BLM lands under State ownership from grazing and other sources. Because this exchange represents the conclusion of the exchange involving State lands, Table 4-4 shows the cumulative potential revenue from the acquired BLM lands in Phases I, II, and III of the CBSA exchange.

The revenue from grazing on the BLM parcels is based on applying the DNRC minimum grazing rate to the AUM stocking rate used by the BLM in its current lease arrangements. Because DNRC and BLM use different criteria for determining carrying capacity, the number of AUM's could change slightly after the exchange. Thus, the monetary value of the grazing should only be considered an estimate. Grazing could potentially

increase for some period following timber harvest on the Surenough/Potter Divide tract, but for purposes of this environmental assessment, it is assumed that stocking levels would remain at pre-harvest levels to avoid damaging regeneration growth following harvest.

Under our present lease agreements, the State should receive \$37,445.81 in 2000 for the grazing leases on State lands involved in this exchange (Table 3-19). In reality, the State will receive less than that amount, because some lessees have not paid, anticipating the lease will be lost after the exchange. The State will receive approximately \$28,056.00 from the BLM lands in Phase III, resulting in a net loss for this Phase of about \$9,400.00. However, when all three phases of the exchange are taken into account (see Table 4-4), the State will generate about \$939.00 more per year, if none of the BLM lands are eventually subject to competitive bidding and none of the suitable lands are converted to cropland. If and when competitive bidding and conversion to cropland occurs on suitable lands, then the revenue generated will be substantially greater than the present revenue from the State lands on the Crow Reservation. In any case, the Land Board policy requiring equal or greater revenue will have been met in this exchange.

The revenues from grazing and other annually collected lease payments on common school trust lands are by statute distributable in the year earned to the school equalization account. The minimum lease rate is established by a formula influenced by the price of cattle in the State. Further, depending on when the lease was begun, there are two different minimum rates. Twelve of the 59 State parcels lease at the minimum rate for leases issued before July 1, 1993 (\$3.73/AUM). Twenty-nine parcels lease at the minimum for leases issued after 1993 (\$4.17/AUM). These minimum rates are about three times higher than the BLM lease rate, but are only 1/3 (or less) of the rate charged by the Tribe. The remaining 18 tracts have rates established by competitive bid, ranging from \$8.01 to \$26.94/AUM, which are more comparable to both private and tribal lease rates on the reservation. The Tribe charges by the acre instead of by AUM (animal unit months) and those charges range from a minimum of \$2.00 up to \$5.00 per acre for grazing. The lands typically require about 4 acres per AUM, so the Tribal rate may be as high as \$8.00 to \$20.00 an AUM. Since many private

grazing lands also lease within this price range, the market rate on the reservation appears to be considerably higher than the State rate. Exchanging these lands will eventually convert the State lands to Tribal trust lands and this will have two impacts on existing lessees. It will eliminate the existing preference right granted to the State lessee and it will increase the lease rate.

Leases on Tribal trust lands are granted only to Tribal members, unless no interest is expressed by any members. If that occurs, then non-Indians may compete for the lease. Leases generally run for 5 years and no preference right is given the current lessee. The preference right granted to current State lessees allows them to meet a higher competitive bid at the end of their lease term and thus retain the lease interest on a continuing basis. This allows the lessee to plan his operations, including the State lease, with a reasonable expectation of stability over time and allows the lessee to borrow money to operate or make improvements based on the holding of the State lease. The exchange may exclude the present lessee if a Tribal member acquires the lease. If the current lessee retains the lease, it will be without a preference right, and thus will not allow long range planning based on the expectation of continuing the lease.

Lease rates for tribal trust lands are different for tribal members than for non-Indians. Often, since non-Indians are excluded from the initial bidding, the lease goes to a tribal member at a rate not much different from the State rate. In many cases, that tribal lessee will sub-lease the parcel to a non-Indian at a rate that approaches the market rate as a profitable business venture. Thus, the current State lessee may have an opportunity to lease the parcel if there are no tribal bidders or through a sub-lease arrangement, but at a cost two to five times higher than the State lease rate. The degree to which this cost differential may impact current lessees depends on the extent to which the State leases are important to the total grazing operation. Where the operation is small and the State lease is a significant percentage, the financial impact may be proportionally greater than when the State lease(s) represent a small percentage of the total grazing operation.

Table 4-3 Potential State Revenues from BLM Lands in the Proposed CBSA Phase III Exchange

Table 4-3 Potential State Revenues from BLM Lands in the Proposed CBSA Phase III Exchange							
Tract Identifier	County	Acres	AUM's	Grazing Value	Timber Value	Total Value	\$/Acre/Yr
Hay Creek	Powder River	640	145	\$ 604.65		\$ 604.65	\$ 0.94
Poker Jim Gulch	Powder River	746.8	164	\$ 683.88		\$ 683.88	\$ 0.92
Butte Creek	Powder River	634.1	157	\$ 654.69		\$ 654.69	\$ 1.03
Kimball Creek	Custer	757.41	166	\$ 692.22		\$ 692.22	\$ 0.91
Cottonwood Creek	Custer	320	69	\$ 287.73		\$ 287.73	\$ 0.90
Strevell Creek	Custer	321.64	62	\$ 258.54		\$ 258.54	\$ 0.80
South Strevell Creek	Custer	640	69	\$ 287.73		\$ 287.73	\$ 0.45
N. Fork Strevell Creek	Custer	156.62	30	\$ 125.10		\$ 125.10	\$ 0.80
First Creek	Custer	619.8	82	\$ 341.94		\$ 341.94	\$ 0.55
Second Creek	Custer	640	116	\$ 483.72		\$ 483.72	\$ 0.76
Mizpah	Custer	218.97	75	\$ 312.75		\$ 312.75	\$ 1.43
Strevell/Laney Divide	Custer	640	213	\$ 888.21		\$ 888.21	\$ 1.39
South Laney Creek	Custer	320	107	\$ 446.19		\$ 446.19	\$ 1.39
Powder River	Custer	160	64	\$ 266.88		\$ 266.88	\$ 1.67
Pocochickee /Adams Divide	Carter	360	120	\$ 500.40		\$ 500.40	\$ 1.39
N. Fork Dry Creek	Carter	680	194	\$ 808.98		\$ 808.98	\$ 1.19
Dry Creek	Carter	160	46	\$ 191.82		\$ 191.82	\$ 1.20
Dry Creek Ridge	Carter	320	50	\$ 208.50		\$ 208.50	\$ 0.65
Miles City Creek	Fallon	1280	322	\$ 1,342.74		\$ 1,342.74	\$ 1.05
Brush Creek	Fallon	1416.96	306	\$ 1,276.02		\$ 1,276.02	\$ 0.90
Murphy Coulee	Blaine	1276.88	300	\$ 1,251.00		\$ 1,251.00	\$ 0.98
Hogeland Ridge	Blaine	360	75	\$ 312.75		\$ 312.75	\$ 0.87
Turner South	Blaine	80	19	\$ 79.23		\$ 79.23	\$ 0.99
Turner Colony Northwest	Blaine	400	97	\$ 404.49		\$ 404.49	\$ 1.01
Turner Colony West	Blaine	600	180	\$ 750.60		\$ 750.60	\$ 1.25
North Murray Coulee	Blaine	38.8	8	\$ 33.36		\$ 33.36	\$ 0.86
Murray Coulee	Blaine	960	261	\$ 1,088.37		\$ 1,088.37	\$ 1.13
Turner North	Blaine	107.09	32	\$ 133.44		\$ 133.44	\$ 1.25
Upper Camp Creek	Blaine	160.11	36	\$ 150.12		\$ 150.12	\$ 0.94
Lower Camp Creek	Phillips	640	110	\$ 458.70		\$ 458.70	\$ 0.72
Roanwood Valley	Phillips	400	68	\$ 283.56		\$ 283.56	\$ 0.71
Mosquito Creek	Valley	320	54	\$ 225.18		\$ 225.18	\$ 0.70
Kamanski Hill	Valley	320	51	\$ 212.67		\$ 212.67	\$ 0.66
West Fork Poplar River	Valley	157.5	30	\$ 125.10		\$ 125.10	\$ 0.79
Morgan Coulee	Valley	160	30	\$ 125.10		\$ 125.10	\$ 0.78
Round Butte	Valley	320	48	\$ 200.16		\$ 200.16	\$ 0.63
Glentana South	Valley	360	61	\$ 254.37		\$ 254.37	\$ 0.71
Middle Fork	Valley	320	58	\$ 241.86		\$ 241.86	\$ 0.76
West Fork	Valley	640	150	\$ 625.50		\$ 625.50	\$ 0.98
Shonkin Creek	Chouteau	40	8	\$ 33.36		\$ 33.36	\$ 0.83

Table 4-3 Potential State Revenues from BLM Lands in the Proposed CBSA Phase III Exchange

Tract Identifier	County	Acres	AUM's	Grazing Value	Timber Value	Total Value	\$/Acre/Yr
Surenough/Potter Divide	Fergus	520	50	\$ 208.50	\$ 7,540.00	\$ 7,748.50	\$ 14.90
Rose Creek	Fergus	320	104	\$ 433.68		\$ 433.68	\$ 1.36
Rose/Dog Creek Divide	Fergus	240	69	\$ 287.73		\$ 287.73	\$ 1.20
Bloomfield Butte	Fergus	320	92	\$ 383.64		\$ 383.64	\$ 1.20
Whiskey Ridge West	Fergus	40	4	\$ 16.68		\$ 16.68	\$ 0.42
Taffy Creek	Fergus	80	15	\$ 62.55		\$ 62.55	\$ 0.78
Flax Coulee	Fergus	788.62	228	\$ 950.76		\$ 950.76	\$ 1.21
Taffy Ridge	Fergus	200	36	\$ 150.12		\$ 150.12	\$ 0.75
Two Calf Creek	Fergus	320	72	\$ 300.24		\$ 300.24	\$ 0.94
White Horse Butte	Fergus	40	10	\$ 41.70		\$ 41.70	\$ 1.04
N. Fork Taffy Creek	Fergus	40	7	\$ 29.19		\$ 29.19	\$ 0.73
Total/Average		21,601.3	4,920	\$ 20,516.40	\$ 7,540.00	\$ 28,056.40	\$ 1.22

Table 4-4 Comparison of Revenue Potential for Phase I -III of CBSA Exchange

Exchange Phase	Actual State Revenue	Potential Revenue from BLM Lands	Difference
Phase I	\$ 5,203.98	\$ 10,512.42	\$ 5,308.44
Phase II	\$ 8,676.59	\$ 13,707.10	\$ 5,030.51
Phase III	\$ 37,455.81	\$ 28,056.00	\$ (9,399.81)
Total	\$ 51,336.38	\$ 52,275.52	\$ 939.14

Although the financial impact may be an imposition to the current lessee, it is apparent that State lease rates on the reservation are generally below the rate for private grazing. Thus, the impact can also be viewed as a removal of a benefit which is not available to those without State leases, and a transfer of that benefit (because of the Tribe's differential between Indian and non-Indian lease rates) to a successful Indian bidder. From the viewpoint of the successful bidder and the Crow Tribe this would be seen as a beneficial impact of the exchange.

Finally, an impact associated with the loss of preference and potential loss of grazing privileges is the question of dealing with this change in an area of "open range." A change of lessee has impacts beyond the loss of grazing or the increased price of grazing because it raises the question of the cost and burden of fencing and the economic consequences of not fencing. Most current lessees have developed a vested interest not only in the State lease but in the lands surrounding the State

parcel. They try to have exclusive use of the range for a period of time so as to avoid intermixing cattle from other herds. This is partly because of the extra work involved in separating herds, but more importantly, it allows serious ranchers to maintain a breeding program that allows herd improvement over time and produces calves that can bring a better price. Loss of preference on a small parcel of land in a pasture otherwise controlled by a single grazing operation can have serious impact on the ability to exclusively use a pasture. The impact is even more serious if the lessee has developed water on the State parcel for use in the larger pasture. Fencing is generally seen as a poor solution because of the limited distribution of water and the inability to enforce gate closures. It is important to note that most State lessees also have additional leases or subleases from the Crow Tribe or individual tribal members. Thus, State lessees have had to deal with and accommodate these impacts under presently existing conditions.

Tribal Resolution 75-22 places the duty, burden, and cost of fencing on the non-Indian, if a fence is required to separate exclusive grazing use.¹⁷ The same resolution then grants co-ownership of the fence to both the Indian and the non-Indian. In some cases, this greatly compounds the impact to the current lessees, who not only lose the use of the State parcel, but must bear the entire cost of a fence in which they have only partial ownership, making it difficult to prosecute damage claims over cut wires, gates left open, etc.

4.1.10.2 Timber

Revenue from timber sales on common school lands, since 1992, has gone directly into the school equalization account and is generally spent in the year it is earned (See Figure 3-1). Table 4-3 shows what the projected annual value of the timber could be from the Surenough/Potter Divide tract, the only BLM parcel being exchanged that has commercial timber. This annual value of \$7,540.00 is essentially the amount of money that would have to be invested annually to equal the net present value of the timber. Although this is not an annual income that can be compared directly to the income from grazing, the timber annual value provides an average value resulting from infrequent, but relatively large, timber revenues with intervening years of no income from timber.

The final column in Table 4-3 and in Table 3-17, presented earlier, shows the relative value of the lands in terms of the amount of revenue produced per acre, per year. The State lands on the reservation produce revenue at an average of \$1.82/acre/year, while the BLM lands that would be acquired average \$1.22/acre/year. This imbalance in revenue producing capability is compensated by the acquisition of more valuable, timbered lands in Phases I and II of the exchange.

There is no merchantable timber on the State lands on the Crow Reservation, so no revenue would be generated by timber sales from these lands either before or after an exchange.

4.1.11 Hydrologic and Soil Resources

Some soil disturbance and hydrologic impact will be associated with any roads built to improve access, harvest timber or convert previously broken lands to cropland. No new roads are anticipated to improve access at this time and most roads necessary for timber harvest are already in place on the Surenough/Potter Divide tract. Timber harvest will create changes in the hydrologic regime by generally increasing the amount of precipitation that reaches the ground surface and the rate of spring snow melt and decreasing the evapotranspiration within the harvested area. These changes occur rapidly following harvest, but are dynamically changing as regrowth occurs and are difficult to predict. These impacts may or may not be significant and would have to be addressed in a separate environmental assessment if timber harvest were to subsequently occur.

Soils could become prone to excessive erosion if overgrazing were to occur as a result of the exchange. However, the State does not routinely allow overgrazing and degradation of the grazing or soil resource. On State lands on the Crow Reservation, there does not appear to be any significant difference in grazing practices or stocking levels between present State and tribal leases and overgrazing leading to soil erosion is not anticipated. This is also true when comparing BLM lands with adjacent State parcels, even though each agency uses a different methodology to arrive at stocking levels.

4.2 Impact of No Action

The No Action alternative assumes that the proposed exchange of lands is not approved and does not take place. It basically maintains the status quo with regard to land ownership, management policy, and revenues. It does have some consequences because the BLM will remain under statutory obligation to provide private land exchanges to make up for State land exchanges that do not occur. The BLM still would be required to complete an environmental assessment for impacts associated with private exchanges. The biggest impact

¹⁷ Tribal Resolution 75-22 has not been tested in court involving the Crow Tribe's attempt to enforce this ordinance. A recent Bureau of Indian Affairs attempt to enforce the resolution was overturned on appeal by the Indian Board of Appeals.

of no action is that lands now in BLM ownership would be converted to private ownership. If the lands BLM selects to exchange had public access, this could result in a decrease of accessible public lands in Montana. At the same time, this action may not affect the public's ability to reach public land, if land selected by BLM currently has no access. The BLM private exchange program would place additional private lands on the tax rolls in counties where these exchanges occur and private individuals would enjoy the benefits of private ownership, although private ownership may be more costly for uses, such as grazing and weed treatment, than a BLM lease.

4.2.1 General Geography, Topography and Aesthetics

No impacts are anticipated to the geography, topography or aesthetics of the BLM or State lands under the No Action alternative. BLM has previously initiated timber sales on the Surenough/Potter Divide tract and could do so again in the future. The tract does not have high visibility from any public road or residences, so visual impacts associated with timber sales or any new roads should be minimal.

4.2.2 Climate

Climate would neither affect nor be affected by the No Action alternative.

4.2.3 Groundwater, Geology and Mineral Potential

The No Action alternative would have no effect on groundwater or geology. BLM would maintain both surface and sub-surface estates for the lands it holds. The State would continue to hold only the surface estate for the Crow Reservation State lands.

4.2.4 Surface Water Rights

There would be no effect on the BLM lands. Current State lessees that enjoy water developments on the State parcels would continue to have the use of those water developments for stock water use.

4.2.5 Vegetation

If the Surenough/Potter Divide tract remains under the current BLM management, BLM will continue to implement timber management to reduce hazardous fuels and the risk of wildfire while maintaining the abundance of wildlife habitat. Lands that have potential for cultivation (previously broken, with suitable soils and topography) will remain unchanged under BLM management. However, when BLM initiates private exchanges, there is the potential for native rangeland to be converted to cropland under private ownership.

4.2.5.1 Rare Plants

There would be no impacts to rare plants under the No Action alternative, unless the BLM private exchange program involves lands with rare plants.

4.2.5.2 Noxious Weeds

No Action would result in the BLM and State continuing to be responsible for weed identification and control on the lands each agency presently administers. The State assigns responsibility for control of noxious weeds to the lessee, through the lease contract.

4.2.6 Wildlife Habitat and Fisheries

Wildlife habitat generally would be unaffected and unchanged from present conditions by the No Action alternative. However, some wildlife habitat now on public lands would come under private ownership. Stewardship methods and results may change as a result of land ownership transfers. For example, native range or homesteaded lands that have reverted to native range under BLM ownership may be converted to cropland under private ownership, with resultant

impacts to species dependent on native range. These actions would be evaluated by BLM personnel in a private exchange program environmental assessment.

4.2.6.1 Threatened and Endangered Species

There would be no impact to any Threatened or Endangered species under the No Action alternative, unless subsequent private exchanges by BLM involve lands that are inhabited by such critical species.

4.2.7 Recreation

BLM lands would continue to have recreational use similar to that which currently exists, except to the extent that such lands are involved in private exchanges, which might limit or remove the opportunity for public recreation. State lands would continue to be under used because of a general lack of access and restrictions prohibiting big game hunting by non-Indians on the Crow Reservation.

4.2.8 Cultural Resources

The Crow Tribe anticipates that there are a great number of sites on State lands within the reservation that have cultural, social, and religious significance to the Crow Tribe. Ownership of these lands by the Crow Tribe, will eventually allow the Tribe to discover and enjoy the benefits of these resources. State ownership would deny or delay these benefits. Under the No Action alternative, both BLM and the State would continue to have responsibility over protection of cultural resources on their lands. BLM would have to perform cultural clearances for lands involved in the private exchange program.

4.2.9 Access

Access generally would not change under the No Action alternative. BLM parcels would continue to be administered under BLM's access policy, except that any lands in the private exchange program that are presently accessible to the public would have future access determined by the private landowner that acquires the BLM lands. With few exceptions, State lands on the Crow reservation would continue to be legally inaccessible to the general public.

4.2.10 Socioeconomics

4.2.10.1 Timber and Grazing Revenue

Grazing revenues for the State and BLM will continue from existing lessees. Existing State grazing lessees will continue to have preference and will continue to use water developments on the State parcels. BLM will probably continue to manage its timbered tracts, but perhaps less intensively for timber revenue, than if the tracts were in State ownership.

The Crow Tribe would not acquire the State parcels and tribal members would not have the opportunity to compete for State leases until current lease terms expire. Even then, the preference right holder would have the opportunity to meet the high bid and retain the grazing lease. Only tribal members who currently hold State leases would benefit.

BLM would have to actively work with the Crow Tribe and private landowners both on and off the reservation to find private landowners willing to participate in an assembled private exchange to meet the mandate of the Crow Boundary Settlement Act. The Act requires BLM to provide land to the Crow Tribe equivalent in value to the originally selected State land on the reservation (approximately 44,800 acres). Since exchanges for part of this land has already occurred in Phase I and II of the exchange, no action would mean that BLM would have to provide the Crow Tribe with the value of approximately 32,369 acres through the private exchange program.

Because there are intrinsic values to private land ownership that are not quantifiable, it is not practical to try to determine if the fair market value paid by a private party to acquire BLM lands is more cost effective than simply continuing with a BLM lease, which is invariably less expensive. However, if the land were subleased for grazing after being acquired by a private individual, the owner could potentially collect lease fees as high as ten times the BLM grazing lease rate.

4.2.10.2 Payment in Lieu of Taxes

Under the No Action alternative, the State would continue to receive PILT as it has in the past.

4.2.11 Hydrologic and Soil Resources

There is no foreseeable change in the Hydrologic and Soil resources under the No Action alternative, except for lands, yet unidentified, that might be involved in private exchanges which might subsequently be broken for cropland. This could have the potential to increase wind and water erosion and increase stream sedimentation, should it occur. Such impacts would be evaluated by BLM in a separate private exchange program environmental assessment.

4.3 Impact of the Mitigated Exchange Alternative

This alternative is referred to in the text as the Mitigated Exchange alternative and it evaluates various actions that might be taken by the Land Board to mitigate or reduce specific impacts on ranching operations for current State lessees. Key words that are highlighted in bold text in this paragraph will be used to differentiate these mitigation options. These include the possible consideration of **delayed implementation** until the end of the current lease term to allow more time for a lessee to adjust operations; granting **access easements** to lessees before the exchange to ensure future access to other lands; making exchanges contingent on an equitable **cost sharing** between parties if the exchange requires fencing (tribal resolution requires the non-Indian to fence to keep livestock from trespass on a tribal lease). Another mitigated exchange that could be suggested and evaluated, but not enforced without Crow tribal concurrence, would be the granting of **continued lessee preference** for a transitional period of time. The lessee would have to pay more for the grazing lease, but would have some additional time to resolve problems that loss of the lease would cause. Finally, **private exchanges**³⁸ could be considered simultaneously with an exchange between the BLM and the State. In cases where loss of a particular State lease could irreparably harm a ranching operation, the State could consider exchanging fee (privately owned) lands of

equal value for State lands. Simultaneously, the lands acquired by the State would be offered for exchange with the BLM to fulfill the requirements of the Crow Boundary Settlement Act. Concurrence by the Crow Tribe and the BLM would be necessary, since any private land exchanged in lieu of State land with BLM would become tribal trust land.

At this time one three-way private exchange is being proposed by a State lessee and the Crow Tribe. In the three-way exchange, two parcels of State land (Pryor Creek and Broken Leg Creek) would be retained by the State lessee as private or fee lands. The lessee will provide the value of these State lands in a trust account that will be disbursed upon closing to partially purchase private lands that are for sale south of Hardin, which have been selected by the Crow Tribe. The private parcel selected by the tribe is located below the Big Horn Canal, is cultivated and irrigated, and has a sale value of \$156,500.00. An appraisal of the property is pending. Figure 4-1 shows the location of the Big Horn Canal parcel. The Crow Tribe will pay the residual cost to acquire the parcel and the lessee and Tribe will split the closing costs and realty fees to acquire the private parcel. The State will still acquire selected BLM lands off of the Crow Reservation equal in value to the State parcels being exchanged.

Another option the Crow Tribe may use to implement the three-way private exchange would involve the disbursement of the state lessee's trust account funds to reimburse the Crow Tribe for fee lands the Tribe has already acquired. The tribe acquired the Veenhuis Ranch in anticipation of the Phase IV exchange involving the BLM private exchange program to replace State lands no longer owned by the State on the reservation. The Veenhuis Ranch value exceeds the value of lands involved in Phase IV by more than \$300,000. Disbursement of the lessee trust account to the Tribe would reduce the loan and loan costs of the Tribe resulting from the Veenhuis Ranch purchase. In effect, the Tribe would be paid back the value of fee lands already purchased. The Veenhuis Ranch includes approximately 11,726 acres of land in Big Horn and Yellowstone counties and is depicted in Figure 4-2.

³⁸ In this context, private exchanges are voluntary three-way exchanges between the Crow Tribe, the state and private individuals. This mitigation option is not part of the private exchange program between BLM and private individuals mandated by the CBSA.

Figure 4-1 Bighorn Canal Tract

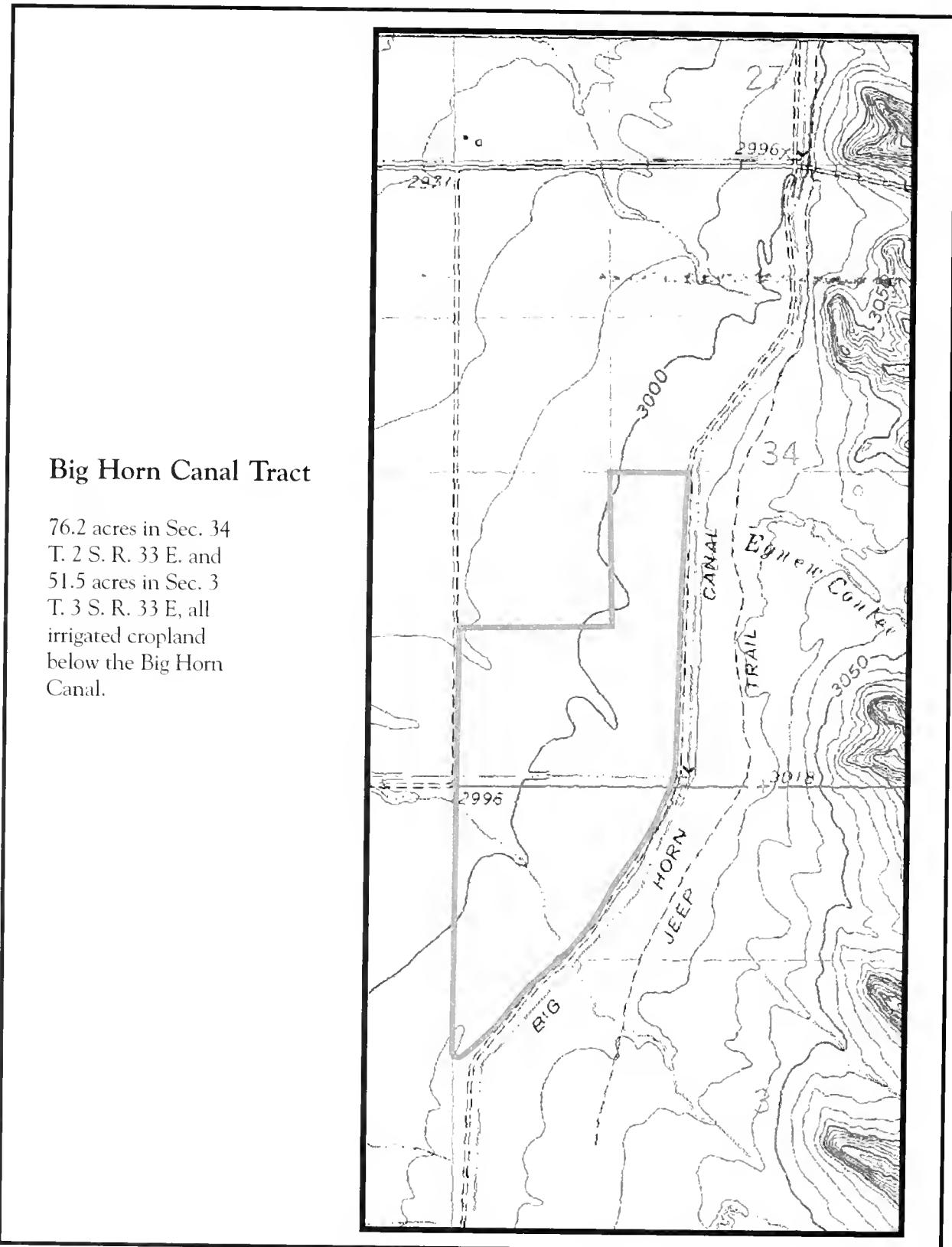
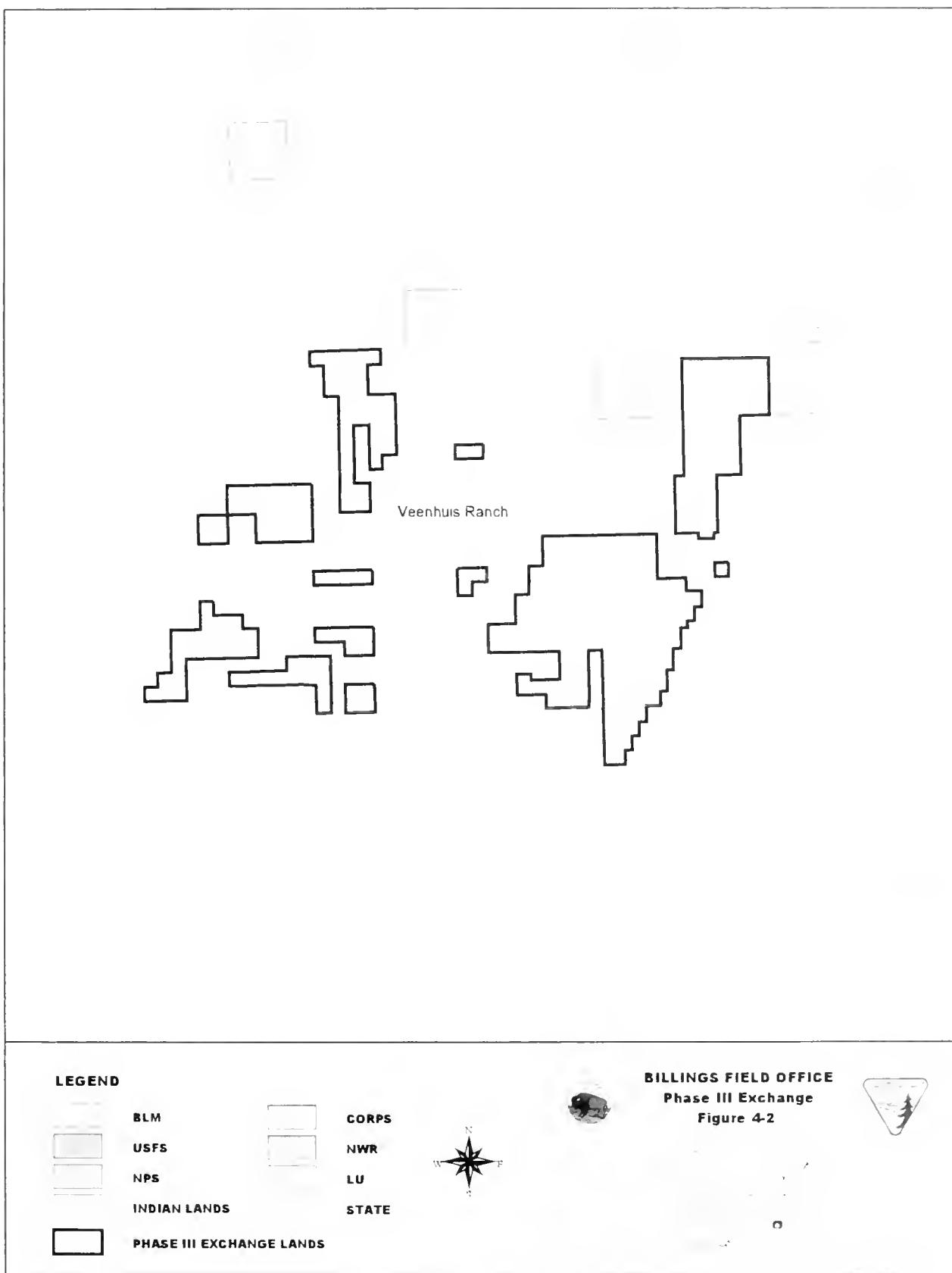


Figure 4-2 Veenhuis Ranch



There is no need to evaluate similar mitigation options for the BLM lands because loss of lessee preference and potential loss of access would not occur upon completion of the exchange and cost sharing for fencing is the normal procedure, rather than the exception off the Reservation.

If delayed implementation is used as a mitigation on the State lands, it also would delay implementation on the BLM lands, even though lessees have already been given a required two-year notification for cancellation of their BLM leases.

4.3.1 General Geography, Topography and Aesthetics

The Mitigated Exchange alternative would have the same effect as the proposed action, which is basically no effect except for potential viewshed and vegetation changes if timber harvesting, additional roading or conversion to cropland occur after the exchange. Delayed implementation would delay the onset of this impact.

4.3.2 Climate

The Mitigated Exchange alternative would have no effect on climate.

4.3.3 Groundwater, Geology and Mineral Potential

Impacts would be the same under the Mitigated Exchange alternative as would occur under the Proposed Action. Under the private three-way exchange option, the State lands being considered (Pryor Creek and Broken Leg Creek parcels) have the Eagle Formation underlying much of the tracts and small springs emanating from the base of this exposed aquifer. The Big Horn Canal tract the Tribe would acquire in the three-way exchange is situated on the eastern edge of the Bighorn River floodplain and may be underlain by an alluvial gravel aquifer. However, the heavy, clayey surface soils suggest this area may not have as much groundwater as other areas closer to the Bighorn River. Also, the underlying geology is a dense, clayey marine shale that is not considered an aquifer. Because the parcel is

contiguous to and irrigated from the Big Horn Canal, groundwater availability may not be an issue. The lands of the Veenhuis Ranch are underlain by the Mowry and Thermopolis Shales, which are not considered aquifers.

4.3.4 Surface Water Rights

Delayed implementation or continued lessee preference would allow more time for lessees to develop alternative water supplies (new stock water ponds, wells and distribution tanks, hauled water dispensing tanks, etc.) where they may be losing access and rights to use of water developed on State lands. Tribal lessees may also need to develop water on State sections that are presently without water before they are useable as grazing tracts, if they become separately fenced.

Private exchange would have impacts similar to the proposed action, but would require additional evaluation of any water rights on fee lands proposed for exchange. In the case of the only proposed three-way exchange involving the Pryor Creek, Broken Leg Creek, and Big Horn Canal tracts, the State water rights on the two State parcels would go to the present lessee at the time the exchange is done. The only water rights filed on the Big Horn Canal parcel are irrigation rights from the Big Horn Canal (43P-W190136) held by the Department of the Interior. In the exchange, the ditch rights would remain appurtenant to the irrigated cropland acquired by the Crow Tribe, but the Department of the Interior would continue to hold the water right.

In the case of private exchange using a portion of the Veenhuis Ranch, the Crow Tribe has already acquired these lands and water rights.

4.3.5 Vegetation

The Mitigated Exchange alternative would have no impact on vegetation, except that delayed implementation or continued lessee preference would maintain the current operator and grazing practices, thus likely maintaining the status quo in terms of range condition and productivity.

4.3.5.1 Rare Plants

It is unknown if the Mitigated Exchange alternative would have an impact on rare plants. The potential three-way exchange involving the Big Horn Canal tract would not affect any rare plants, since the tract is irrigated cropland. No rare plants are known to exist on the Veenhuis Ranch, should it be involved in a three-way exchange.

4.3.5.2 Noxious Weeds

Any new roads, wheel tracks, or other vehicular access routes required to implement either the Proposed Action or the Mitigated Exchange alternatives, would become potential invasion routes for noxious weeds that tend to spread along travel routes or areas of disturbance (spotted knapweed, Canada thistle, etc.). Weeds on the Big Horn Canal tract are effectively controlled through cultivation and/or application of commercial herbicides. Although some weeds may exist on the Veenhuis Ranch, no infestations were observed during helicopter over-flights of these and adjacent State lands.

4.3.6 Wildlife Habitat and Fisheries

The Mitigated Exchange alternative would have the same impact on wildlife and fisheries as the proposed action. Delayed implementation might delay the timing of initial and future entries for timber harvest on the Surenough/Potter Divide tract, thus maintaining habitat in essentially its present condition for a longer period of time. To the degree that some BLM lands might be cultivated under State management, those habitat changes would also be delayed. The lands involved in the proposed private three-way exchange are not likely to change from their current land use and would not result in any additional impact to wildlife or fisheries.

4.3.6.1 Threatened and Endangered Species

Like the other alternatives, the Mitigated Exchange alternative would have no discernable impact on threatened or endangered species. No threatened or endangered species use or live on the Big Horn Canal

tract or the Veenhuis Ranch, so the private three-way exchange involving these lands will have no additional impact.

4.3.7 Recreation

The Mitigated Exchange alternative would have the same impact as the Proposed Action on recreation. Delayed implementation would forestall the exchange and potentially diminish the sales of recreational use permits that might be sold to recreationists currently using BLM lands involved in the exchange. Since the Pryor Creek, Broken Leg Creek, and Big Horn Canal tracts and the Veenhuis Ranch do not have public access, there should be no effect on recreation from a private three-way exchange of these lands that would be different from the effects of the Proposed Action.

4.3.8 Cultural Resources

Cultural resources would not be affected under the Mitigated Exchange alternative. The same Memorandum of Understanding (MOU) for Cultural Resources would be in effect under the Mitigated Exchange alternative as under the Proposed Action. Delayed implementation might lengthen the time for cultural resource assessment of State lands within the Crow reservation by the Crow tribe.

4.3.9 Access

Access easements, if granted to lessees prior to the exchange, would allow them access across former State lands to maintain ranch operations that were dependent on that access. This would be a benefit to the lessee, particularly if the lessee could not be guaranteed such access under tribal ownership. The State would also benefit, to the degree that the State recovers sufficient monetary return from the easements to compensate for any value diminished as a result of granting such easements. Private exchanges are essentially another way to ensure continued lessee use and access to lands critical to ranch operations. The private lands involved in the proposed three-way exchange have roads going to them, but they appear to be private roads cooperatively used by adjacent landowners. The Crow Tribe, in agreeing to a three-way exchange would

probably want to ensure that present access is adequate and would continue after the exchange.

The State does not normally process access easement applications unless it can be shown that legal access is already available up to the point of entry to a State lease parcel, or that access existed as a right-of-way or easement when the parcel was acquired by the State.

The Crow Tribe has already indicated that it opposes the State granting such easements to lessees because it places an encumbrance on the land they would receive and, more importantly, because it would not allow the Tribe to capture the monetary benefit of the easement, even if the Tribe is in agreement with granting access.

4.3.10 Socioeconomics

Most of the impact discussion under the Mitigated Exchange alternative is concentrated in this section, since, ultimately, most of the impact of the exchange is socioeconomic in nature.

4.3.10.1 Delayed Implementation

Delayed implementation of the exchange would allow the *status quo* to continue for some indefinite period to grant lessees additional time to make individual adjustments in their operations to compensate for the loss of the State leases. These adjustments may include changing the configuration of pastures to eliminate dependence on a State parcel, development of replacement stock water, negotiating for the sale or lease of replacement pasture, herd reduction to adjust to the future resource base, or even selling and reestablishing operations elsewhere. While these adjustments would probably cost the lessee money, the impact can be mitigated if the costs are spread over a longer time.

Delayed implementation would grant the benefit of this additional time, and the benefit is primarily to the State lessee, although federal lessees also would be subject to lower lease rates for a longer time.

The State, by virtue of the Land Board exchange criteria, has to benefit, or at least not be harmed, in order for the exchange to be approved. Assuming that the State would benefit in the exchange, then delayed implementation would delay the State beginning to receive any enhanced benefits that would be gained by

the exchange and risk of diminishing those benefits may occur if delay results in increases in land values on BLM lands, faster than values increase on the Crow reservation. The State and BLM have agreed to "lock-in" the appraisal values for a period of two years from the acceptance of the appraisals by both parties. If delayed implementation were to result in more than two years delay in the exchange, then a potentially costly refresh appraisal can be requested by either party. The State might also benefit from delayed implementation if Crow reservation lands increase in value faster, resulting in more BLM land being granted to the State. In either case, both the State and BLM have greater administrative costs if the exchanges are delayed.

The exchange is being done primarily for the benefit of the Crow Tribe, and the Tribe would not be able to begin benefiting immediately from the exchange if it were delayed. To the extent that the State also benefits from the exchange, those benefits would be foregone for the duration of any delayed implementation.

4.3.10.2 Access Easements

The effect of access easements as a way of mitigating impacts to current State lessees is described under Section 4.3.9. Access. This might be useful where State parcels separate deeded lands owned by the lessee, but none of the lessees involved in this exchange have expressed interest in this option. This may be because few, if any, of the existing access roads and trails directly connect State land with deeded parcels and almost all access ultimately depends on a combination of access across tribal, allottee, and/or deeded lands. This can result in difficulty showing legal access up to the point of entry of the State section and in meeting the requirement that this be demonstrated before an easement application can be processed by the State.

4.3.10.3 Cost Sharing

The Socioeconomics impact section of the Proposed Action (4.1.10) points out that, under the exchange, lessees would not only lose their lease, but would be required by Tribal Resolution 75-22 to bear all costs of fencing, if fencing were the only way to realistically separate use of the parcel from adjacent lands. The cost sharing mitigative measure would take the stance that, if fencing is required, it would benefit both parties, and

in fairness to all, both parties should share equally in the cost of the fencing. Under this measure the exchange would be contingent upon an agreement that Tribal Resolution 75-22 would have no force or effect over lands acquired under this exchange.

4.3.10.4 Continued Lessee Preference

Continued Lessee Preference is a variation of delayed implementation. Basically it would allow the exchanges to go forward, avoiding delaying any benefit to the State or the Crow Tribe, but it would allow, with the Tribe's assent, continued lessee preference until the end of the current lease term. This means that the lessee would have to pay the higher tribal lease rate, but would have the same additional time that delayed implementation would give, to plan and implement adjustments to current operations (changing the configuration of pastures to eliminate dependence on a State parcel, development of replacement stock water, negotiating for the sale or lease of replacement pasture, herd reduction to adjust to the future resource base, selling and reestablishing operations elsewhere, or other measures).

Even though the Tribe would begin getting the higher lease rate immediately under the Continued Lessee Preference, some benefits to the Tribe would be foregone. The reason is that at least part of the benefit to the Tribe would go to individual tribal members who would have the opportunity to compete for the tribal lease, where they may have been effectively precluded from doing so under the preference granted the State lessee. Since the Tribe leases to its members at a lesser rate than to non-Indians, it is assumed the Tribe has as much interest in the benefit to individual members as it does in the collective monetary benefit to the Tribe in the acquisition of these lands.

Allowing the exchange to go forward would have the same benefit to the State as the proposed action, in that it would allow the State to capture the benefit of the exchange immediately and would avoid the erosion of this benefit by any differential escalation of BLM land values.

4.3.10.5 Private Exchanges

There is one proposed private three-way exchange described earlier which involves the State lessee becoming the owner of the Pryor Creek and Broken Leg Creek tracts; the Crow Tribe receiving equal value to these tracts in the acquisition of the Big Horn Canal tract; and the State receiving the same BLM lands it would have received without the private exchange. This exchange could also be accomplished using excess private land on the Veenhuis Ranch, already purchased by the Crow Tribe for the Phase IV private exchange. Involving private land in the exchange process raises certain issues that are not otherwise involved. The most important of these issues is compliance with Section 2 of the Crow Allotment Act of 1920 which provides:

No conveyance of land by any Crow Indian shall be authorized or approved by the Secretary of the Interior to any person, company, or corporation who owns at least six hundred and forty acres of agricultural or one thousand two hundred and eighty acres of grazing land within the present boundaries of the Crow Indian Reservation, nor to any person who, with the land to be acquired by such conveyance, would become the owner of more than one thousand two, hundred and eighty acres of agricultural or one thousand nine hundred and twenty acres of grazing land within said reservation. Any conveyance by any such Indian made either directly or indirectly to any such person, company, or corporation of any land within said reservation as the same now exists, whether held by trust patent or by patent in fee shall be void and the grantee accepting the same shall be guilty of a misdemeanor and be punished by a fine of not more than \$5,000 or not more than six months or by both such fine or imprisonment

Because of infrequent and uneven enforcement of this provision, it was estimated in 1983 that more than 590,000 acres out of approximately 700,000 acres of fee lands on the Reservation may have been conveyed and/or acquired in violation of the provisions of Section 2. Because of this, title companies regularly except Section 2 issues from the coverage of title insurance policies in land transactions on the Reservation. Section 2

restricts and potentially voids conveyances and the issue of potential voidness of transactions has resulted in the overly cautious policy of title companies on the Reservation to except from title insurance issues relating to Section 2.

The United States District Court for Montana in 1992 addressed the issue of the “void” provision of Section 2 and, employing a thorough and persuasive analysis, the Court, relying on Dillon et al. v. Antler Land Company et. al., 341 F. Supp. 734 (Mont 1972) affd. 507 F.2d 940 (9th Cir. 1974) found that Section 2 issues are subject to Montana’s five year statute of limitations; and that the Crow Tribe’s action to enforce Section 2 against fee landowners within the Reservation was barred by the Montana statute of limitations. (Crow Tribe of Indians v. Campbell Farming Corp. et al., 828 F. Supp. 1468, 1475; aff’d. for other reasons, Crow Tribe of Indians v. Campbell Farming Corp. et. al., 31 F.3d 768, 9th Cir., 1994).

Dillon and Crow Tribe v Campbell reveal that a claim premised upon the “void” provision of Section 2 can succeed only if the plaintiff establishes that he/she “was seized or possessed of the property in question within five years before the commencement of the action.” (See Campbell Farming Corp. id.; MCA Sec.

70-19-401 (1997). Consequently, so long as the lands in question have not, within the past five years, been conveyed in violation of the Section 2 acreage limitations, the “void” provisions of Section 2 do not constitute a cloud on the title of the Tribe or the entity conveying to the Tribe and will not adversely affect federal acquisition of title pursuant to the CBSA. Nothing in either Section 2 or a title company’s commitment for title insurance serves to alter the application of Montana’s five year statute of limitations.

As long as any fee lands involved in a three-way exchange have not been conveyed in violation of Section 2 in the past five years and the Crow Tribe provides a written acknowledgement of the title validity issues and requests the conveyance as part of a three-way exchange, then the exception for the commitment for title insurance can be waived and the fee land can be acquired by the federal government as part of the exchange.

If agreeable to the Crow Tribe, additional private

exchanges between the State and the current State lessee could be proposed, when a parcel critical to a ranch operation would be lost through a CBSA exchange. There would be a benefit to the present lessee, in that the private exchange would ensure continued viable ranch operation. The Crow Tribe would still receive the same benefit of equal value land being converted to Tribal trust land. However, unless private exchanges are proposed and evaluated early in the exchange process, they would add additional steps to the CBSA exchange and would have the same effect and impact as Delayed Implementation because of the necessity for appraisals and MEPA/NEPA compliance. With the exception of the three-way exchange discussed previously, no other three-way exchanges have been concurred in by the Crow Tribe at this time.

4.3.11 Hydrologic and Soil Resources

The Mitigated Exchange alternative would have the same impacts as the Proposed Action alternative. The proposed private exchange involving either the Big Horn Canal tract or the Veenhuis Ranch would not have any additional effects on hydrologic or soil resources.

4.4 Comparison of Alternatives

Table 4-5 compares the alternatives by examining the various impacts for:

1. Board of Land Commissioners’ seven criteria for land exchanges,
2. Impacts for various significant resource issues described in Chapter 3, Affected Environment.

Table 4-5 Alternative Comparison and Impact Summary

Table 4-5 Alternative Comparison and Impact Summary			
Issue	Proposed Action or Exchange Alternative	No Action	Mitigated Exchange
Board of Land Commissioners Criteria			
1. Equal or greater value	The State would exchange 59 tracts worth \$2,866,599.00 for 88 individual parcels aggregated into 51 BLM tracts worth \$2,875,096.20. When accounting for a residual value of \$6,101 owed to the State from the first two exchange phases, the exchange is approximately the same value.	Under the No Action alternative, there would be no exchange.	Delayed implementation has potential to diminish the acreage received by the State if BLM lands are appreciating faster than State lands on the Crow Reservation. The reverse would be true if State lands are appreciating faster. In either case, delayed implementation will have greater administrative costs.
2. State land bordering on navigable lakes and streams	Six State tracts border, or are crossed by, small perennial streams. None of the streams are navigable nor are the tracts they cross accessible to the public. The streams probably have small trout fisheries and a total of about 3 miles of stream are on State lands. Four BLM tracts have about 3.5 miles of perennial streams. The Powder River, which borders the Mizpah tract is navigable and, although not considered an important fishery, contains several threatened or endangered species.	Under the No Action alternative, there would be no exchange	Same as Proposed Action. Any private lands proposed for private three-way exchanges contain no streams or fisheries
3. Equal or greater income to the trust	State tracts produced \$36,300 in 2000 from grazing. One lessee did not pay his lease fee and the lease was cancelled. BLM lands acquired in the exchange have the potential to produce \$28,056 per year from grazing and timber. When considering all three exchange phases, potential annual revenue from BLM lands (\$52,275.52) exceeds actual State revenue (\$50,179.63) by approximately \$2,100. Had the lessee that defaulted on the lease made the lease payment, the difference would be about \$940 per year.	Under the No Action alternative, there would be no exchange and the present revenue stream to the school trust would continue unchanged, if the State tracts remain leased.	Delayed implementation would defer increased benefits to the State. Access easements may allow the capture of some additional value before the exchange. Continued lessee preference would provide the same benefit as the proposed action. Proposed private exchanges will have no effect on income to the trust.
4. Equal or greater acreage	BLM is constrained to exchange on the basis of equal appraised value. In Phase III the State will receive about 715 more acres of BLM land than it is giving up, because the State land was slightly more valuable. Over the entire exchange (Phases I-III), the State would be exchanging	State acreage would remain the same because the exchange would not occur.	Same as the proposed action.

Table 4-5 Alternative Comparison and Impact Summary

Issue	Proposed Action or Exchange Alternative	No Action	Mitigated Exchange
	33,313.23 acres for 27,153.07 acres of BLM land, for a net loss of 6,160 acres. However, many of the tract acquired are timbered and more valuable than grazing lands.		
5. Consolidation of State lands	Most of the BLM tracts will create larger, consolidated State tracts. Some of the lands acquired are not contiguous with State lands, but will create a block of State lands in close proximity where none existed before.	State tracts would remain in their present configuration.	Same as the proposed action.
6. Potential for long term appreciation	Because the lands are widely distributed in a variety of real estate markets, it is difficult to draw a general conclusion about long-term appreciation potential of the acquired lands. Generally, most BLM and State lands used exclusively for grazing are similar in value and are assumed to be appreciating at the same rate.	Under the No Action alternative, there would be no exchange	Delayed implementation may lessen the acres ultimately exchanged to the State if BLM lands off the Crow Reservation are appreciating faster. The State might receive more lands if the State lands are appreciating faster. In either case, delay will increase the administrative costs of the exchange, which may negate any monetary benefit from delaying implementation.
7. Access	Only six of 59 State tracts are accessible to the public via county roads. Public access off of the county roads for these six tracts will be lost after the exchange. This exchange would increase the amount of accessible acres of State lands generally, but would not increase access to public lands, because the public's access to the BLM lands acquired would remain the same as before the exchange, with the exception that off-road vehicular travel (if any was occurring) would be prohibited.	If the proposed exchange would not occur, access would remain as at present with the State tracts generally remaining inaccessible to the public. BLM tracts would remain under BLM's access and travel policies. Because BLM would be required to provide the exchange lands through an assembled private exchange, about 21,000 additional acres of BLM land would eventually become private land and any public access to these lands would be lost.	The proposed private three-way exchange does not involve accessible lands so it will not affect access any differently than the Proposed Action. All other options in the Mitigated Exchange Alternative eventually have the same effect as the Exchange Alternative.
Public and Agency Issues by Resource Topic			
1. Grazing Costs	BLM presently leases grazing for \$1.35/AUM; the State minimum rate is \$4.17/AUM; and the Crow rate ranges over about \$8.00- \$20.00/AUM. As BLM lands transfer to the State, former BLM lessees would pay a higher State rate. Former State lessees, if they are able to maintain their leases would be required to pay the higher tribal	With No Action, the exchange as proposed would not occur and leases would remain under their present jurisdiction, and presumably at present rates.	Delayed implementation would maintain the present lessees and lease rates, perhaps until present leases expire, then would be the same as the Proposed Action. Continued Lessee Preference would allow State lessees on the Crow Reservation to maintain their leases until they run out, but would begin paying

Table 4-5 Alternative Comparison and Impact Summary

Issue	Proposed Action or Exchange Alternative	No Action	Mitigated Exchange
	lease rate. If they are not able to continue to lease the exchanged lands, they may have to seek additional lease lands in the private leasing market at current market rates similar to tribal rates.		immediately at the higher cost tribal lease rate. In both cases, tribal members would be precluded from competing for the leases until the lease term ended.
2. Preference Rights	The State would recognize by mutual agreement the BLM lessee as the lessee of record entitled to a State preference right at the end of the initial lease term. The Crow Tribe, upon converting State lands to tribal trust lands, would grant a preference to tribal bidders, so non-Indian State lease holders would lose their preference right when the exchange occurs.	No Action would maintain the status quo with regard to preference rights	Delayed implementation would be like No Action (status quo) until the exchange actually occurs, then it would be the same as the proposed action. Continued Lessee Preference would also maintain the present State lessee on former State tracts, until the present lease runs out. At that time the tribal preference for tribal member bidders would be in effect.
3. Payment in Lieu of Taxes (PILT)	BLM is required to continue to make PILT payments on former BLM lands exchanged to the State as long as the State retains ownership of the exchanged lands.	Same as the Proposed Action	Same as the Proposed Action
4. Public Access	Unless petitioned and authorized for closure, public access to the BLM lands would remain the same after they are transferred to the State, with the exception that a recreational use permit would be required for recreational pursuits that had no additional cost under BLM management. Six State parcels had legal public access via county roads. There would be no legal public access to areas other than the county road right-of-way following the exchange.	Public access on BLM lands would maintain the status quo under BLM management. State lands would continue to have no legal public access, except for the six tracts adjacent to or crossed by county roads.	Same as the Proposed Action, except perhaps delayed under the delayed implementation option The proposed private three-way exchange does not involve accessible lands so it will not affect access any differently than the Proposed Action
5. Lessee Access	On BLM lands, current lessees would continue as the lessee of record for at least one lease period (ten years) and would enjoy the same access that they had as BLM lessees. On State lands, there would be no continuing preference right. Under tribal administration, access to other ranch operations dependent upon access through the former State lease may be lost to current lessees, or compensation for that access may be required by a new lessee or the Crow Tribe.	Access for lessees would continue as it currently exists.	The access easements option would allow lessees of State sections to secure access easements from the State that would remain in place after the exchange. Normally to process such an easement, the State would require a demonstration that the lessee had legal access to the State section and that the access requested is critical to maintaining ranch operations.
6. Fencing Costs	Because of the loss of lessee preference rights on State lands	Preference rights of current lessees would be maintained.	Under the Cost Sharing Option, any exchange that required the

Table 4-5 Alternative Comparison and Impact Summary

Issue	Proposed Action or Exchange Alternative	No Action	Mitigated Exchange
for leases lost on the Reservation	that would be exchanged, fencing may be required to separate future users, because the State parcels are generally part of a larger grazing unit with only a perimeter fence. Tribal Resolution 75-22 would require the non-Indian to bear fencing costs if separation of uses from an Indian lessee was deemed necessary.	lessening the need to separate grazing interests by fencing.	current lessee to fence out the former lease lands to alleviate otherwise unavoidable impacts, would be contingent upon an equitable sharing of fencing costs between the current and future lessee.
7. Reimbursement for Improvements	BLM lessees would continue to enjoy any improvements made to BLM lands involved in the exchange, as long as they retain status of being the State lessees on the parcels. State Law (77-2-206, MCA) requires that State lessees that would lose the use and enjoyment of authorized improvements through an exchange must be compensated for authorized improvements. The Crow Tribe has already begun the process of making offers for improvement settlement agreements for authorized improvements.	No reimbursements necessary, since lessees would continue to enjoy the benefits of any improvements they have made.	Same as the Proposed Action. To the extent that three-way private exchanges allow current State lessees to own the State land and improvements on the land, no reimbursement for improvements is necessary.
8. Access to Water	Exchange of some of the State lands has the potential (especially if fencing occurs) to separate grazing pasture from traditional stock water sources. This may have effects both to former lessees and to new lessees. Loss of State parcels with developed water may result in larger grazing areas being unusable without access to that water. State parcels without water development may be unusable to a tribal lessee without access to water on adjacent lands.	The status quo would be maintained.	Same as the Proposed Action
9. Future Foreseeable Actions	BLM has an active timber program in its Lewistown Field Office and could be expected to log the Surenoough/Potter Divide tract some time in the future, although with the trust compensation mandate, future timber management under State management will likely be more intense. Previously broken BLM lands suitable for cultivation will have a better opportunity for future cultivation under State ownership. These future actions would be subject to environmental review under	Timber harvest on BLM lands may occur, but will be less likely. BLM does not allow cultivation on its lands, so none of the lands suitable for cultivation will be changed from their present range/tame pasture condition.	Same as the Proposed Action

Table 4-5 Alternative Comparison and Impact Summary

Issue	Proposed Action or Exchange Alternative	No Action	Mitigated Exchange
	MEPA.		
10. Wildlife Habitat	Wildlife habitat would continue to be maintained after the exchange more or less like the present. However, the State would use selective, intermittent timber harvests to maintain a healthy forest and future timber harvest opportunities. State management may alter forest habitats more than BLM management and affect wildlife in different ways. These harvests would have temporary impacts on wildlife security and travel routes and may displace wildlife during timber harvest activity. Any rangeland that eventually becomes cultivated cropland will alter wildlife use and impact species dependent on rangeland.	There would be no change to present management of wildlife and habitat.	Same as Proposed Action.
11. Cultural Resources	BLM and the State have entered into a Programmatic Agreement with the approval of SHPO and the Advisory Council on Historic Preservation. This agreement would require the State to do a complete cultural survey to federal standards on lands acquired in the exchange if a land use change is proposed that would potentially threaten any cultural, historical, or paleontological resources.	Respective State and federal requirements would continue to apply to cultural resources as they have in the past.	Same as the Proposed Action.
12. Use of BLM tracts Listed in Appendix B.	The impacts which would occur if these tracts were used have been analyzed in this EA, along with other BLM tracts which were specifically identified for disposal in the West HiLine and the Judith-Valley-Phillips RMPs. All of these tracts meet the disposal criteria in those RMPs, especially since their use will assist in the fulfillment of the requirements and mandates of the Crow Boundary Settlement Act.	The status quo would be maintained.	Same as the Proposed Action.

5.0 CONSULTATION AND COORDINATION

This chapter lists State, federal and other agencies consulted in the preparation of this EA.

5.1 *Federal Agencies*

US Department of the Interior,
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US Department of the Interior,
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5.2 *State Agencies*

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State Historic Preservation Office

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5.3 *Tribal Governments*

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Carter County Commission
Chouteau County Commission
Custer County Commission
Fallon County Commission
Fergus County Commission
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Phillips County Commission
Richland County Commission
Rosebud County Commission
Valley County Commission
Wibaux County Commission
Yellowstone County Commission

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Montana Association of State Grazing Districts

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APPENDIX A —Legal Description of the Big Horn Canal Tract and the Veenhuis Ranch

Big Horn Canal

Principal Meridian Montana

T2S, R33E

Section 34: That portion of the S $\frac{1}{2}$ SW $\frac{1}{4}$ which is West of the Big Horn Canal — 56.5 acres

That portion of the NE $\frac{1}{4}$ SW $\frac{1}{4}$ which is West of the Big Horn Canal — 19.7 acres

T3S, R33E

Section 3: That portion of the N $\frac{1}{2}$ NW $\frac{1}{4}$ which is West of the Big Horn Canal — 51.5 acres

Veenhuis Ranch

Principal Meridian Montana

T4S, R27E

Sec. 2: SW $\frac{1}{4}$ and Lot 4

Sec. 3: Lots 1,2,3,4,6,7,8,9,10, and 11, N $\frac{1}{2}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$

Sec. 10: W $\frac{1}{2}$ E $\frac{1}{2}$

Sec. 11: N $\frac{1}{2}$ NW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$

Sec. 12: S $\frac{1}{2}$ S $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ N $\frac{1}{2}$ SE $\frac{1}{4}$

Sec. 15: NE $\frac{1}{4}$

Sec. 16: All

Sec. 17: NE $\frac{1}{4}$, SW $\frac{1}{4}$

Sec. 22: N $\frac{1}{2}$ S $\frac{1}{2}$

Sec. 24: E $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$

Sec. 27: N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$

Sec. 29: SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$, W $\frac{1}{2}$ W $\frac{1}{2}$

Sec. 30: W $\frac{1}{2}$ SE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$

Sec. 31: Lots 6, 7, and 8, W $\frac{1}{2}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$

Sec. 32: S $\frac{1}{2}$ NE $\frac{1}{4}$

Sec. 33: W $\frac{1}{2}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ NE $\frac{1}{4}$

Sec. 34: W $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$

T4S, R28E

Sec. 2: Lots 1,2,3 and 4, S $\frac{1}{2}$ N $\frac{1}{2}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$

Sec. 3: Lots 1 and 2, S $\frac{1}{2}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$

Sec. 10: E $\frac{1}{2}$

Sec. 11: W $\frac{1}{2}$

Sec. 14: W $\frac{1}{2}$ W $\frac{1}{2}$ W $\frac{1}{2}$ W $\frac{1}{2}$

Sec. 15: E $\frac{1}{2}$, E $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ W $\frac{1}{2}$

Sec. 19: Lot 7, NE $\frac{1}{4}$ SE $\frac{1}{4}$

Sec. 20: All

Sec. 21: All

Sec. 22: N $\frac{1}{2}$ N $\frac{1}{2}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$

Sec. 23: NW $\frac{1}{4}$ SW $\frac{1}{4}$

Sec. 27: NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ E $\frac{1}{2}$ SW $\frac{1}{4}$, NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$

Sec. 28: All

Sec. 29: All

Sec. 30: E $\frac{1}{2}$, SW $\frac{1}{4}$

Sec. 31: Lots 7 and 8, S $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$

Sec. 32: Lots 3 and 4, E $\frac{1}{2}$ W $\frac{1}{2}$, W $\frac{1}{2}$ E $\frac{1}{2}$

Sec. 33: All

Sec. 34: NW $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$

T5S, R28E

Sec. 4: Lots 2, 3, and 4, S $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$

Containing about 11,725.93 acres, more or less in Big Horn and Yellowstone Counties.

APPENDIX B—Notice of Intent to Amend the West HiLine and Judith-Valley-Phillips Resource Management Plans

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

{Docket No. 4310 - DN}

Notice of Intent

[Montana]

[MT-924-00-1430-01-003E]

Notice of Intent to Amend the Judith-Valley-Phillips and the West HiLine Resource Management Plans; Blaine and Fergus Counties, Montana

AGENCY: Bureau of Land Management, Interior

ACTION: Notice

SUMMARY: Notice is hereby given that the Bureau of Land Management (BLM) will amend the Judith-Valley-Phillips Resource Management Plan (RMP) and the West HiLine RMP with respect to management of public lands in Blaine and Fergus Counties. The BLM proposes exchanging 6595.68 acres of Federal surface estate in Blaine and Fergus Counties for State trust land within the Crow Indian Reservation in Big Horn and Yellowstone Counties as a part of Phase 3 of the Crow Boundary Settlement Act Land Exchange. The Federal land is legally described as:

	Acres
Fergus County	
T20N, R19E, PMM	
sec. 8: NW $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$	160
sec. 9: S $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	240
sec. 15: N $\frac{1}{2}$	320
T21N, R19E, PMM	
sec. 27: S $\frac{1}{2}$ SW $\frac{1}{4}$	80
sec. 29: S $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	240
sec. 30: SE $\frac{1}{4}$	160
sec. 31: N $\frac{1}{2}$ NE $\frac{1}{4}$	80
sec. 32: NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	480
sec. 33: NW $\frac{1}{4}$	160
sec. 34: E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	240
T22N, R19E, PMM	
sec. 18: NW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	320
sec. 19: NE $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$	360
sec. 20: NE $\frac{1}{4}$ NE $\frac{1}{4}$, W $\frac{1}{2}$ NW $\frac{1}{4}$	120
T22N, R20E, PMM	
sec. 3: S $\frac{1}{2}$ S $\frac{1}{2}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$	200
sec. 10: NW $\frac{1}{4}$ NE $\frac{1}{4}$, N $\frac{1}{2}$ NW $\frac{1}{4}$	120
Blaine County	
T29N, R21E, PMM	
Sec. 8: S $\frac{1}{2}$ NE $\frac{1}{4}$	80
T35N, R22E, PMM	
Sec. 1: SE $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$	280
Sec. 2: S $\frac{1}{2}$	320
Sec. 11: W $\frac{1}{2}$	320
Sec. 12: N $\frac{1}{2}$ N $\frac{1}{2}$, SE $\frac{1}{4}$	320
T35N, R23E, PMM	
Sec. 7: Lot 1	36.88
Sec. 29: E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	160
Sec. 31: NE $\frac{1}{4}$ NE $\frac{1}{4}$	40
Sec. 32: N $\frac{1}{2}$ N $\frac{1}{2}$	160
T35N, R25E, PMM	
Sec. 32: E $\frac{1}{2}$ NE $\frac{1}{4}$	80
Sec. 33: N $\frac{1}{2}$, SW $\frac{1}{4}$, NE $\frac{1}{4}$ SE $\frac{1}{4}$	520
T36N, R24E, PMM	
Sec. 3: Lots 3 and 4	38.80
Sec. 10: N $\frac{1}{2}$, SE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$	520
Sec. 14: N $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$	120
Sec. 15: N $\frac{1}{2}$	320

Disposal of the Federal land described above was not analyzed in the Judith-Valley-Phillips and West HiLine Resource Management Plans(RMP) and their associated Environmental Impact Statements. Disposal of the Federal land requires that the specific tracts be identified in the land use plan with the criteria to be met for exchange and discussion of how the criteria have been satisfied. This will be part of the plan amendment and an Environmental Assessment will be prepared to analyze the effects of disposal.

DATES: Comments and recommendations on this notice to amend the Judith-Valley-Phillips RMP and the West HiLine RMP should be received on or before January 10, 2000.

ADDRESS: Comments should be sent to David L. Mari, Field Manager, Lewistown Field Office, P.O. Box 1160, Lewistown, MT 59457-1160.

FOR FURTHER INFORMATION CONTACT: Loretta Park, Realty Specialist, 406-538-1910.

Date: December 10, 1999

/s/ David L. Mari
David L. Mari, Field Manager

APPENDIX C—Mineral Report

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

MINERAL REPORT

107TH MERIDIAN SETTLEMENT

PHASE III CONVEYANCE LANDS

MTM88990, MTM88991, MTM88992

LANDS INVOLVED

Tracts within Blaine, Big Horn, Carter, Chouteau, Custer, Fallon, Fergus, Phillips, Powder River, Richland, Rosebud, Valley, Yellowstone, and Wibaux aggregating 47,962.07 acres

(See Report Text for Legal Descriptions)

Prepared by: David G. Coppock

/s/ David G Coppock
(Signature)

Geologist/ Mineral Appraiser
(Title)

June 5, 2000
(Date)

Technical Approval: Management Acknowledgment:
/s/ Jim Gruber /s/ Howard A. Lemm
(Signature) (Signature)

Geologist MT921 Acting DSD Resources
(Title) (Title)

June 6, 2000 June 6, 2000
(Date)(Date)

107th Meridian Settlement- Phase III Conveyance Lands, 2000

I. Conclusion and Recommendations

The conveyance lands contain the potential for the occurrence of oil, gas, coal, and mineral materials resources. Development potential for oil and gas ranges from low to high. Moderate to high oil and gas development potential exists on tracts located in northern Fergus, Richland, Wibaux, western Rosebud, Fallon, Custer, Carter, and Powder River Counties. There are no producing wells or leases on the tracts. Coal of high development potential occurs within the Pine Hills field on the tract located in Custer County in T. 7 N., R. 50 E.. The coal is not likely to be developed within the foreseeable future. There is no leasable mineral production on any of the subject tracts.

Mineral materials resources are abundant throughout the region and have the potential for occurrence on the tracts. There are no known pits or permits on any of the subject tracts and development potential is unknown. Development of any mineral material resources on the tracts would be demand-driven and permitting is discretionary. There are no areas of high demand on any of the tracts for mineral materials at the present time. Mineral materials ownership would remain with the United States and permitting could continue with coordination with the State of Montana as the surface owner.

There are no geologic or mineral-related reasons which would preclude the conveyance of surface rights of the subject lands out of federal ownership. The proposed conveyance would not interfere with operations under the Mineral Leasing Act.

II. Introduction

This is a geology and mineral potential report of Public lands to be potentially offered to the State of Montana as well as State lands to be acquired by the United States and transferred to the Crow Tribe as part of Phase III of the 107th Meridian Settlement. This conveyance of lands out of Federal ownership involves surface estates only; the mineral rights will be retained by the United States. State lands will be acquired and transferred in fee simple ownership.

This report is based on a search of available published and unpublished data. A field examination was not conducted. The Bureau of Land Management is considering a proposal to exchange land in accordance with the procedures of Section 206 of the Federal Land Policy and Management Act of 1976 (43 USC 1716), as amended. This is phase three of a multi-phased land exchange which has been jointly proposed by the BLM and the Montana Department of Natural Resources and Conservation pursuant to Public Law 103-444, the Crow Boundary Settlement Act of 1994.

This is Phase III of a multi-phased land exchange project which is being proposed pursuant to the Crow Boundary Settlement Act of November 2, 1994. The Crow Boundary Settlement Act was enacted in order to redress an 1891 survey error whereby the eastern boundary of the Crow Indian Reservation was erroneously located on-the-ground and as a result, the Crow Tribe had been denied land granted to it in an 1868 Treaty. After Phase III has been completed, the lands acquired from the State of Montana will be transferred via a Public Land Order to the jurisdiction of the Bureau of Indian Affairs who will hold the land in trust for the Crow Indian Tribe. This land exchange project will be based on equal appraised values and when the final phase of the land exchange effort between the State of Montana and the United States is completed, the appraised values of the exchanged lands must be equal.

III. Lands Involved

PROPOSED EXCHANGE OF LANDS IN BLAINE, BIG HORN, CARTER, CHOUTEAU, CUSTER, FALLON, FERGUS, PHILLIPS, POWDER RIVER, RICHLAND, ROSEBUD, VALLEY, YELLOWSTONE, and WIBAUX COUNTIES MONTANA

MTM88990, MTM88991, and MTM88992

The following described federal land is being considered for exchange by the United States:

Principal Meridian Montana	Acres
Blaine County T29N, R21E Sec. 8: S½NE¼	80.00
T35N, R22E Sec. 1: SE¼, N½SW¼, SE¼SW¼	280.00
Sec. 2: S½	320.00
Sec. 11: W½	320.00
Sec. 12: N½N½, SE¼	320.00
T35N, R23E Sec. 7: Lot 1	36.88
Sec. 29: E½SW¼, W½SE¼	160.00
Sec. 31: NE¼NE¼	40.00
Sec. 32: N½N½	160.00
T35N, R25E Sec. 14: S½SE¼	80.00
Sec. 21: E½	320.00
Sec. 22: W½NW¼	80.00
Sec. 32: E½NE¼	80.00
Sec. 33: N½, SW¼, NE¼SE¼	520.00
T36N, R24E Sec. 3: Lots 3,4	38.80
Sec. 10: N½, SE¼, SE¼SW¼	520.00
Sec. 14: N½NW¼, SW¼NW¼	120.00
Sec. 15: N½	320.00
T36N, R26E Sec. 19: Lots 1, 2, SW¼NW¼	107.09

Carter County
T4S, R55E
Sec 3: SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$ 240.00
Sec 10: N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$ 120.00
Sec 14: All 640.00
Sec 15: NE $\frac{1}{4}$ SE $\frac{1}{4}$ 40.00
Sec 21: NE $\frac{1}{4}$ 160.00

T4S, R56E
Sec 29: S $\frac{1}{2}$ 320.00

Chouteau County
T21N, R9E
Sec. 8: SE $\frac{1}{4}$ NE $\frac{1}{4}$ 40.00

Custer County
T4N, R53E
Sec 6: Lots 1-11, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 757.41

T5N, R52E
Sec 26: W $\frac{1}{2}$ 320.00

T6N, R50E
Sec 2: lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$ 321.64
Sec 24: All 640.00

T6N, R51E
Sec 6: Lots 1,2,4, SE $\frac{1}{4}$ NE $\frac{1}{4}$ 156.62
Sec 30: Lots 1-4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$ 619.80
Sec 32: All 640.00

T6N, R52E
Sec 30: Lots 4,7,9-11,13,14, W $\frac{1}{2}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$,
E $\frac{1}{2}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$ 218.97

T6N, R53E
Sec 30: Lots 1-24, E $\frac{1}{2}$ 1207.48

T7N, R50E
Sec 30: Lots 1,2, E $\frac{1}{2}$ E $\frac{1}{2}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$ 314.75
T7N, R51E
Sec 32: All 640.00
Sec 34: W $\frac{1}{2}$ 320.00
Sec 36: W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$ 160.00

Fallon County
6N, R55E
Sec 8: All 640.00

Sec 17: All 640.00

T6N, R56E

Sec 1: lots 1-12, S^{1/2} 776.96

Sec 12: All 640.00

Fergus County

T13N, R21E

Sec. 15: NW^{1/4}SW^{1/4} 40.00

Sec. 20: SE^{1/4}NE^{1/4}, SE^{1/4} 200.00

Sec. 21: SW^{1/4}NE^{1/4}, NE^{1/4}NW^{1/4}, S^{1/2}NW^{1/4} 160.00

Sec. 28: NW^{1/4}NW^{1/4} 40.00

Sec. 29: N^{1/2}NE^{1/4} 80.00

T20N, R19E

Sec. 8: W^{1/2}W^{1/2} 160.00

Sec. 9: SE^{1/4}, S^{1/2}SW^{1/4} 240.00

Sec. 15: N^{1/2} 320.00

T21N, R19E

Sec. 27: S^{1/2}SW^{1/4} 80.00

Sec. 34: SW^{1/4}, E^{1/2}NW^{1/4} 240.00

T22N, R18E

Sec. 13: NW^{1/4}NW^{1/4} 40.00

T22N, R19E

Sec. 9: W^{1/2}NE^{1/4} 80.00

Sec. 18: NW^{1/4}NW^{1/4}, S^{1/2}NW^{1/4}, N^{1/2}SW^{1/4}, SE^{1/4}SW^{1/4}, W^{1/2}SE^{1/4} 320.00

Sec. 19: NE^{1/4}, N^{1/2}SE^{1/4}, SW^{1/4}SE^{1/4}, S^{1/2}SW^{1/4} 400.00

Sec. 20: NE^{1/4}NE^{1/4}, W^{1/2}NW^{1/4} 120.00

Sec. 21: SW^{1/4} 160.00

T22N, R20E

Sec. 3: S^{1/2}S^{1/2}, NE^{1/4}SE^{1/4} 200.00

Sec. 4: SE^{1/4}SW^{1/4} 40.00

Sec. 10: N^{1/2}NW^{1/4}, NW^{1/4}NE^{1/4} 120.00

Sec. 15: NW^{1/4}NW^{1/4} 40.00

Phillips County

T24N, R26E

Sec. 6: Lot 3 40.11

Sec. 7: SW^{1/4}NE^{1/4} 40.00

Sec. 8: E^{1/2}SE^{1/4} 80.00

Sec. 20: SW^{1/4}SW^{1/4} 40.00

Sec. 28: NW^{1/4}SE^{1/4} 40.00

Sec. 29: W $\frac{1}{2}$ NE $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$ 200.00
Sec. 30: E $\frac{1}{2}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$ 360.00

T24N, R25E
Sec. 8: SE $\frac{1}{4}$ SE $\frac{1}{4}$ 40.00
Sec. 17: NE $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 320.00
Sec. 20: NE $\frac{1}{4}$ NE $\frac{1}{4}$ 40.00
Sec. 21: N $\frac{1}{2}$ N $\frac{1}{2}$, SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$ 240.00

Powder River County
T5S, R53E
Sec 15: All 640.00

T3S, R52E
Sec 35: Lots 1-12, N $\frac{1}{2}$ 746.80

T1S, R53E
Sec 4: Lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$ 634.10

Richland County
T24N, R53E
Sec 30: Lots 3,4, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 304.98

Rosebud County
T5N, R38E
Sec 10: NW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$ 160.00

T9N, R36E
Sec 6: Lots 1-7, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 630.00

T10N, R36E
Sec 30: Lots 3,4, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ 313.51
Sec 32: W $\frac{1}{2}$ 320.00

T12N, R32E
Sec 24: E $\frac{1}{2}$ 320.00

Valley County
T37N, R40E
Sec. 4: SE $\frac{1}{4}$ SW $\frac{1}{4}$ 40.00
Sec. 9: W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ 360.00

T37N, R41E
Sec. 28: N $\frac{1}{2}$ 320.00

T37N, R42E	
Sec. 21: NW $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SE $\frac{1}{4}$	320.00
Sec. 35: E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	160.00

T36N, R42E	
Sec. 2: Lot 4, SW $\frac{1}{4}$ NW $\frac{1}{4}$	78.75
Sec. 3: Lot 1, SE $\frac{1}{4}$ NE $\frac{1}{4}$	78.75
Sec. 23: E $\frac{1}{2}$ SE $\frac{1}{4}$	80.00
Sec. 24: NE $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$	280.00

T36N, R41E	
Sec. 10: SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	240.00
Sec. 15: N $\frac{1}{2}$ NW $\frac{1}{4}$	80.00

T35N, R42E	
Sec. 8: SE $\frac{1}{4}$	160.00
Sec. 9: SW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$	200.00

T34N, R40E	
Sec. 11: S $\frac{1}{2}$	320.00

T33N, R39E	
Sec. 1: W $\frac{1}{2}$ W $\frac{1}{2}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$	240.00
Sec. 2: E $\frac{1}{2}$, E $\frac{1}{2}$ NW $\frac{1}{4}$	400.00

Wibaux County	
T18N, R58E	
Sec 6: Lots 1-7, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	680.76

Containing 27,104.16 acres, more or less, of federal land in Blaine, Carter, Chouteau, Custer, Fallon, Fergus, Phillips, Powder River, Richland, Rosebud, Valley, and Wibaux Counties.

The above described federal lands have been segregated from mineral entry and location and the public land laws, except for exchange.

For grazing lessees and permittees of the above described federal land, this constitutes an official Two-Year Notice pursuant to 43 CFR 4110.4-2(b) that their federal grazing privileges may be reduced as a result of this proposed land exchange.

In exchange the United States will acquire the following described State Trust land within the Crow Indian Reservation from the State of Montana:

Principal Meridian Montana	Acres
Yellowstone County	
T1S, R28E	
Sec. 4: S $\frac{1}{2}$ NW $\frac{1}{4}$, S $\frac{1}{2}$	400.00
Sec. 16: All	640.00
T2S R27E	
Sec. 36: All	640.00
T3S R25E	
Sec. 36: Lots 5-10, E $\frac{1}{2}$ E $\frac{1}{2}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$	324.35
T3S R27E	
Sec. 16: All	640.00
Sec. 36: All	640.00
T4S R28E	
Sec. 1: Lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$	642.47
Sec. 4: Lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$	646.62
Big Horn County	
T2S R32E	
Sec. 10: E $\frac{1}{2}$	320.00
Sec. 11: W $\frac{1}{2}$, SE $\frac{1}{4}$	480.00
T3S R30E	
Sec. 22: All	640.00
Sec. 23: All	640.00
T3S R31E	
Sec. 6: Lots 1-7, S $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	625.20
Sec. 7: Lots 1-4, E $\frac{1}{2}$, E $\frac{1}{2}$ W $\frac{1}{2}$	624.02
T4S R30E	
Sec. 24: All	640.00
T4S R31E	
Sec. 22: E $\frac{1}{2}$	320.00
Sec. 23: NE $\frac{1}{4}$	160.00
T5S R30E	
Sec. 9: All	640.00

T5S R31E		
Sec. 3: Lots 1-4, S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$	647.20	
Sec. 21: N $\frac{1}{2}$, SW $\frac{1}{4}$	480.00	
Sec. 28: NW $\frac{1}{4}$	160.00	
T6S R32E		
Sec. 1: N $\frac{1}{2}$ S $\frac{1}{2}$	160.00	
T6S R33E		
Sec. 10: All	640.00	
Sec. 22: SE $\frac{1}{4}$	160.00	
T6S R34E		
Sec. 15: S $\frac{1}{2}$	320.00	
Sec. 16: All	640.00	
T6S R35E		
Sec. 8: E $\frac{1}{2}$	320.00	
Sec. 9: W $\frac{1}{2}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$	320.00	
T7S R28E		
Sec. 8: S $\frac{1}{2}$ NE $\frac{1}{4}$, S $\frac{1}{2}$	400.00	
Sec. 9: S $\frac{1}{2}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	320.00	
Sec. 10: S $\frac{1}{2}$ N $\frac{1}{2}$, S $\frac{1}{2}$	480.00	
T7S R32E		
Sec. 25: S $\frac{1}{2}$	320.00	
Sec. 26: SE $\frac{1}{4}$	160.00	
Sec. 32: NE $\frac{1}{4}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$	280.00	
Sec. 36: NE $\frac{1}{4}$	160.00	
T7S R33E		
Sec. 29: S $\frac{1}{2}$	320.00	
Sec. 30: Lots 3-4	82.43	
T7S R34E		
Sec. 16: NW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00	
Sec. 36: All	640.00	
T7S R35E		
Sec. 36: Lot 4	28.88	
T7S R36E		
Sec. 13: NW $\frac{1}{4}$	160.00	
T7S R38E		
Sec. 1: Lot 10, SW $\frac{1}{4}$ SW $\frac{1}{4}$	84.85	
Sec. 2: S $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	
Sec. 12: Lots 5 and 6	83.45	

T8S R34E	
Sec. 12: S½	320.00
Sec. 13: NW¼	160.00
Sec. 14: E½, SW¼	480.00

T8S R35E	
Sec. 16: NE¼NW¼	40.00

T8S R37E	
Sec. 16: NW¼SE¼, S½SE¼	120.00

T9S R33E	
Sec. 20: S½	320.00
Sec. 30: Lots 1-4, E½NW¼, NE¼, E½SW¼, SE¼	631.56
Sec. 31: Lots 1-2, E½NW¼, NE¼	316.88

T9S R34E	
Sec. 16: SW¼SW¼, E½SE¼	120.00
Sec. 18: NE¼, NE¼SE¼	200.00
Sec. 20: S½NE¼, SE¼	240.00
Sec. 21: NW¼NW¼, E½, S½NW¼, SW¼	600.00

T9S R36E	
Sec. 13: NE¼	160.00

Containing 20,857.91 acres, more or less, of State Trust land in Yellowstone and Big Horn Counties, Montana.

IV. Regional Geology

The study area is situated within the eastern Montana portion of the Missouri Plateau subdivision of the Great Plains physiographic province. The terrain is primarily plains topography with isolated mountain ranges rising from the plains and stream valleys forming a dissected landscape of plateaus, breaks, flat-bottomed valleys, and rolling prairie. Two major rivers, the Yellowstone and Missouri, and their tributaries drain the eastern part of Montana.

Bedrock underlying the region is composed of sedimentary strata ranging in age from Cambrian to Recent and attains a thickness of over 13,000 feet above the crystalline basement. Rocks exposed on the subject tracts range in age from Paleozoic to Recent (Ross, 1955). General stratigraphy of the region is as follows:

PRECAMBRIAN- The oldest rocks in the study area are Precambrian age metamorphic gneisses and schists, exposed in the Little Rocky Mountains. The overlying, late Precambrian Belt Series crops out in the Little Belt Mountains.

PALEOZOIC- During the Paleozoic era, 5,000 to 10,000 feet of Cambrian, Ordovician, Silurian, Devonian, Mississippian, Pennsylvanian, and Permian strata were deposited. The rocks are predominantly limestone and dolomite, but sandstone and shale also occur.

The oldest rocks exposed on the subject tracts are Mississippian in age and are comprised of sandstone, shale, and limestone, in part dolomitic. Formations are included in the Big Snowy and Madison Groups on tracts within central and south-central Montana.

Pennsylvanian age rocks are prolific producers of petroleum in central Montana. Strata include limestones, dolomites, sandstones and shales representative of the Tyler, Minnelusa, and Amsden Formations.

Permian and Triassic redbed and evaporite deposits that include dolomite and gypsum or anhydrite are exposed in southern and central Montana.

MESOZOIC -The Mesozoic era is divided into three periods: Triassic, Jurassic and Cretaceous. Toward the Middle Jurassic time marine sea spread over the region depositing 200 to 600 feet of sandy, shaly and limey sediments.

The Middle and Upper Jurassic Sawtooth Sandstone, Rierdon Formation, and Swift Sandstone are marine rocks of the Ellis Group in western and west-central Montana. Red mudstone, siltstone, sandstone, and gypsum beneath these marine Jurassic rocks, rest unconformably upon the Permian and Triassic Spearfish Formation in southeastern Montana. These strata thin westward into Garfield and Rosebud Counties. The uppermost Jurassic Morrison Formation consists of varied lacustrine, deltaic and fluvial sediments including sandstone, carbonates, and mudstone.

The Cretaceous period began with the deposition of the Kootenai Formation which consists of sandstone and red shale. During Late Cretaceous time an inland sea deposited the Colorado, Claggett and Bearpaw Formations. As the sea retreated it deposited the Eagle Sandstone and Judith River Formation. Cretaceous strata in eastern Montana have three general divisions: 1) the Colorado Group which developed during the first marine advance and is about 2,000 feet thick; 2) the Montana Group, about 1,500 feet thick, deposited during multiple marine advances and retreats containing several different formations; and 3) the Hell Creek Formation, about 700 feet thick, deposited after the complete retreat of the sea as a series of sediments laid down east of the rising Rocky Mountains. Several Cretaceous formations contain coal and bentonite beds.

CENOZOIC - The Cenozoic Era extended from 66 million years to the present. The era is divided into the Tertiary and Quaternary Periods.

Early Tertiary time was a period of intense volcanism and mountain building in the region. The region is broken by isolated centers of intrusive and/or extrusive igneous activity. The Bearpaw, Little Rocky, Highwood, Little Belt, Judith, Big and Little Snowy, and North and South Moccasin Mountains are examples of uplifts formed in this manner.

Tertiary sedimentary rocks include the Fort Union Formation which is the most prominent formation in the region. The Paleocene Fort Union is made up of three members, in ascending order, the Tullock, Lebo and Tongue River. The Tullock Member is composed of a sequence of yellow sandstone, sandy shale, carbonaceous shale and numerous, thin, impure coal beds. The depositional environment of the Tullock was continental and the abundant swamps associated with deposition produced coal of poor commercial quality. The thickness of the Tullock is generally 40 to 500 feet in this part of Montana.

The Lebo Member is a dark gray shale ranging in thickness from 125 to 1,000 feet. It contains no known minerals of economic importance.

The Tongue River Member is composed of yellow sandstone, buff sandy shale, carbonaceous shale, coal and clinker. The Tongue River ranges in thickness from 450 to 1,000 feet in the area. Commercial coal is available in this member within the region (Balster, 1971).

The youngest Tertiary rocks are the Flaxville gravels found in the northern part of the study area. The Flaxville gravels (Upper Pliocene) consist of yellow to ash-gray gravel, clay and sand with local marl and volcanic ash. The gravels are made up of chert, moss agates, quartz, volcanic pebbles and various other rock types.

During the Quaternary period, two major glacial advances occurred. The ice blocked many of the north-flowing rivers in the region, creating large glacial lakes across central Montana. As the ice melted, its load of soil and rock material was deposited over most of northern Montana, filling the pre-glacial valleys and covering the upland plains with glacial drift or moraines consisting of gravels, sand, and clay; but characterized by numerous large boulders of igneous rock. These glacial deposits cover most of the area north of the Missouri River and vary in thickness from several feet to several hundred feet.

Erosion from mountains or from re-worked glacial deposits, occurs at several levels above current drainages. Alluvium of Quaternary Age and terrace deposits of Quaternary and Tertiary age, which occur throughout much of the region, are composed of interbedded clay, silt, sand and gravel, and make up the youngest geologic units in the area. Terraces occur mainly near the valley sides and uplands along the major rivers in the region. Alluvium is thickest along the Missouri and Yellowstone Rivers and their major tributaries, but is present along many smaller streams. Glacial drift of Wisconsin Age, principally occurs in the northern part of the region. The ground moraine consists of a compact mixture of clay, silt, sand, pebbles, cobbles, and boulders. Outwash deposits resulting from receding glacial ice are present in channels that have eroded into the moraine (Denson and Gill, 1965).

V. Local Geology

Federal Lands

Blaine County-

The tract in T. 29 N., R. 21 E., is located along the eastern flanks of the Bearpaw Mountains. It is underlain by the Upper Cretaceous Judith River Formation. Tertiary intrusives occur to the east and south of the tract, however, none are known to occur on the tract.

The other group of tracts, located in northern Blaine County, lie within the Hogeland Basin. They are underlain primarily by the Upper Cretaceous Fox Hills Sandstone and the Tertiary Fort Union Formation which are concealed in many places by the Pliocene Flaxville Gravel.

Carter County-

The Carter County tracts, situated off the north end of the Black Hills Uplift, are underlain by the Upper Cretaceous Pierre Shale and Fox Hills Sandstone.

Chouteau County-

The tract in Chouteau County is situated north of the Highwood Mountains. It is underlain by shale and sandstone of the Cretaceous Colorado Group. The area contains numerous Tertiary intrusive bodies, however, none are known to occur on the tract.

Custer County-

The Custer County tracts are underlain by the Tertiary Fort Union Formation. Tracts near the Powder River may have some occurrence of Quaternary alluvial deposits. The tracts are structurally situated near the Miles City Arch, north of the Powder River Basin and northwest of the Black Hills Uplift.

Fallon County-

The Fallon County tracts are underlain by the Tertiary Fort Union Formation. The tracts are situated near the northwestern extension of the Ekalaka Syncline.

The Fallon County tracts in T. 3 N., R 59 E., and T. 4 N., R. 60 E., are from 10 to 15 miles southwest from oil and gas production associated with the Cedar Creek Anticline. The Ordovician Red River, Silurian Interlake, and Mississippian Mission Canyon formations are the primary producers there. There has been no production in either of the subject townships and several dry holes have been reported. The nearest reported shows were from a Red River test in section 21, T. 4 N., R. 60 E., 2 to 3 miles north and northwest of the tracts. The tracts are considered to have high to moderate development potential for oil and gas.

Fergus County-

Tracts in southern Fergus County, located in T. 13 N., R. 21 E., are underlain primarily by rocks of Mississippian through Jurassic in age. They are situated off the northeastern flanks of the Big Snowy Uplift.

Tracts in northern Fergus County, Twps. 20-22 N., Rgs. 18-20 E., are generally underlain by Cretaceous strata from the Bearpaw and Judith River Formations. The tracts are situated half-way between the Little Rocky Mountains, to the north, and the Judith Mountains, to the south, near the northern extension of the Blood Creek Syncline. The area is characterized by many normal faults which form concentrically some distance from the Little Rocky Mountains.

Phillips County-

The Phillips County tracts are underlain by Upper Cretaceous strata comprised primarily of the Colorado, Bearpaw and Judith River Formations. The area is characterized by a structural high formed by intrusives associated with the Little Rocky Mountains. The tracts are situated off the southeast flanks of the mountains.

Powder River County-

The Powder River tracts are underlain by the Cretaceous Pierre and Tertiary Fort Union Formations. The tracts are structurally situated along the northwestern extension of the Black Hills Uplift near the northern end of the Powder River Basin.

Richland County-

This tract is underlain by the Tertiary Fort Union Formation. It is located in the western portion of the Williston Basin, southeast of the Poplar Dome and south of the Brockton-Froid Fault Zone.

Rosebud County-

The Rosebud County tracts are all underlain by the upper Cretaceous Bearpaw Shale. The tract in T. 5 N., R. 38 E., is situated south of Porcupine Dome and the Vananda Fault. Tracts in Twps. 9 and 10 N., R. 36 E.,

are located off the western flank of Porcupine Dome and along the northern limb of the Sumatra Anticline. The tract in T. 12 N., R. 32 E., is situated on the northern limb of the Sumatra Anticline near the Stensvad and High Five oilfields (Pennsylvanian Tyler Formation reservoirs).

Valley County-

The Valley County tracts are underlain by the Upper Cretaceous Hell Creek and Tertiary Fort Union Formations. These strata are concealed in places by the Tertiary Flaxville Gravel. Structurally, the tracts are located in the western portion of the Williston Basin and near the axis of the northwest-southeast trending Opheim Syncline.

Wibaux County-

This tract is underlain by the Tertiary Fort Union Formation. It is located in the west-central portion of the Williston Basin, northeast of the Cedar Creek Anticline.

State of Montana Lands

Yellowstone County-

The Yellowstone County tracts are underlain by Cretaceous sedimentary rocks of the Colorado and Montana Groups. Formations exposed on the tracts include the Telegraph Creek, Claggett, Mowry. Structurally, the tracts are situated north of the Pryor Mountains Uplift, and south of the Lake Basin Fault Zone near the northeastern end of the Fromberg Fault Zone.

Big Horn County-

The Big Horn County tracts cover an area affected by the Pryor Mountains and Big Horn Uplifts in the western and southern parts of the county. Strata exposed on the tracts range in age from Mississippian through Tertiary. Mississippian, Pennsylvanian, Permian, Triassic and Jurassic rocks are exposed primarily on tracts in Twp. 5-7 S., Rgs. 28-32 E., where they are exposed by the Big Horn River where it has deeply cut through the eastern part of the Pryor Mountains. Cretaceous and Tertiary rocks are exposed in western and southern Big Horn County in groups of tracts west of the city of Hardin and near the Montana-Wyoming border where they begin to grade into the Powder River Basin.

VI. Mineral Occurrence and Development Potential

The subject tracts have occurrence potential for oil, gas, coal, and mineral materials resources, however development potential varies widely, from low to high, between the tracts.

Oil and Gas-

All of the subject tracts are prospectively valuable for oil and gas resources with moderate to high occurrence potential. Development potential ranges from low to high. Tracts considered to have moderate to high development potential for oil and gas are discussed below.

Blaine County- The central Blaine County tract is located approximately 15 miles southeast of the Bowes field. The northeastern Blaine County tracts are located approximately 30 to 35 miles west of the Bowdoin Dome gas field. The

Bowdoin Dome, located in north-central Phillips County, was discovered in 1913, and has expanded to include a roughly circular area, 50 miles in diameter, with over 800 active wells. The gas-producing field has more wells than any other field in this part of Montana. The Blaine County tracts are considered to have high development potential for gas.

Fergus County- The northern Fergus County tracts are near the Leroy gas field. Tracts with the greatest potential are those in T. 22 N., Rgs. 18-20 E., immediately south of the field. The Leroy field was discovered in 1968, but many of the wells were shut-in after completion due to rough terrain and low demand and prices of natural gas. The field is situated on the southern flank of the Bearpaw Arch, an anticlinal uplift that contains abundant Tertiary volcanics and exposed sedimentary rocks of Cretaceous, Jurassic, and Mississippian ages. The Upper Cretaceous Eagle Sandstone is the productive zone in the Leroy field (Rowley, 1985).

Richland and Wibaux County Tracts-

These tracts are considered to have high oil and gas occurrence potential. Regional geologic mapping and drilling indicates more than 13,000 feet of sedimentary section in the area. The source rocks and reservoirs are proven by the number of producing oil and gas wells in this area.

The following horizons are productive throughout the area: 1) the Mississippian Mission Canyon Formation, 2) the Mississippian/ Devonian Bakken Formation, 3) the Devonian Nisku Formation, 4) the Devonian Duperow Formation, 5) the Devonian Winnipegosis Formation, 6) the Ordovician Gunton Formation, and 7) the Ordovician Red River Formation. It is this multiple pay potential that gives this area of Montana such high development potential despite the depth of most of these wells (Long, 1989).

The Richland County tract in T. 24 N., R. 53 E., is located within close proximity to the Charlie Creek, Spring Lake, and Spring Lake West fields. Producing formations there are the Mississippian Bakken, Devonian Nisku and Duperow and Ordovician Red River. No wells have been drilled on the subject tract or within the township.

The Wibaux County tract in T. 18 N., R. 58 E., lies just east of the South Burns Creek field and northeast of the Krug Creek field. The Burns Creek and South Burns Creek fields are primarily Ordovician Red River producers. Trapping mechanism is structural and depths are over 11,000 feet. No drilling has occurred on the subject tract. Two wells drilled within the township were dry holes and were plugged and abandoned (Montana Geological Society, 1985).

Rosebud County Tract- This tract, located in western Rosebud County, is within close proximity to the Sumatra, Stensvad, High Five and Rattler Butte fields in the Central Montana Trough. Production in this area is primarily associated with the Pennsylvanian Tyler Sandstone in a combination structural-stratigraphic traps. Oil reservoirs consist of a number of different age fluvial channel and point bar sands. Structure is instrumental in localizing accumulations and establishing the oil-water contacts in the various pools (Welch, 1985).

The tract is situated along the northern side of the Sumatra Anticline. It is approximately 1 mile northwest of the Rattler Butte field, 5 miles north of the Sumatra field and 5 miles northeast of the High Five field. Several dry holes in the section have been plugged and abandoned. There are no current leases on the tract.

Custer, Carter, Fallon and Powder River County Tracts-

The tracts within Custer, Carter and Powder River Counties are all considered to have high oil and gas occurrence potential. Mapping and drilling indicate over 10,000 feet of sedimentary section in the area. The source rocks and reservoirs are proven by the number of producing oil and gas wells in this area.

Most production in the area is associated with the Cedar Creek Anticline, which crosses northeastern Fallon County. Primary targets there have been the Cretaceous Eagle gas sands and the oil-bearing Ordovician Red River Formation. Another productive area, the Bell Creek field in southeastern Powder River County, is a mature, Cretaceous Muddy Sandstone oil-producing field (Long, 1989).

The Custer County tracts in T. 6 N., R 53 E., have no nearby production. The nearest exploration was a well 1 mile to the northeast, drilled to the Upper Jurassic Swift Formation. Drillstem tests taken in the Cretaceous Muddy Sandstone reported no shows. The subject tracts are considered to have moderate development potential.

Coal-

The Fort Union Formation contains deposits of coal throughout the region. Tracts which are underlain by the Fort Union, primarily those in Rosebud, Custer, Carter, and Powder River Counties, are considered to have high occurrence potential for coal. The only tracts with high development potential, which contain coal resources of economic importance, are located in Custer County in T. 7 N., R. 50 E.. Those tracts are located within the Pine Hills coal field where the Dominy Bed occurs in minable thicknesses.

The Dominy Bed is approximately 17 feet thick with less than 150 feet of overburden on most of the tract (Matson, 1973). Coal reserves are not likely to be developed within the foreseeable future. Transfer of surface ownership of that tract to the State of Montana would not likely result in surface owner non-consent which would preclude future federal coal leasing.

Mineral Materials-

Mineral materials resources are derived from a variety of sources throughout the region. Most of the tracts have some potential for mineral materials related to surficial deposits. In southeastern and extreme eastern Montana, there is a common mineral material resource locally referred to as scoria. Scoria deposits are a result of baking or fusing of overlying rock from burning coal beds. Scoria is associated with most coal deposits and is widely available where the coal-bearing Tertiary Fort Union Formation is present. Tracts with potential for scoria deposits are those located in Rosebud, Custer, Carter, Wibaux, Richland and Powder River counties.

The State of Montana tracts, located in Big Horn and Yellowstone counties, have potential for the occurrence of mineral materials sources related primarily to Tertiary terrace deposits formed off the flanks of the Pryor-Big Horn Uplift.

Tracts in Blaine, Phillips, and Valley counties have potential sources of mineral materials associated with the Tertiary age Flaxville gravels. The Flaxville gravels (Upper Pliocene) consist of yellow to ash-gray gravel, clay and sand with local marl and volcanic ash. The gravels are made up of chert, moss agates, quartz, volcanic pebbles and various other rock types.

Development potential for mineral materials resources on the subject tracts is unknown. There are no known pits or current permits for operations on any of the tracts. Development of mineral materials on any of the tracts is demand-driven and could occur if sufficient demand were present. However, exploration, sampling and testing would be necessary in order to determine the nature, quality and extent of mineral materials deposits suitable for construction purposes.

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APPENDIX D —

US Fish and Wildlife Service candidate, threatened and endangered species, BLM species of special concern, and BLM watch species

The following is a list of US Fish and Wildlife Service candidate, threatened and endangered species, BLM species of special concern, and BLM watch species that have some probability of occurring on one or more exchange land sites.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status*</u>
Mammals		
black-tailed prairie dog	<u><i>Cynomys ludovicianus</i></u>	BLM SSC FWS C
black-footed ferret	<u><i>Mustela nigripes</i></u>	FWS E
Merriam's shrew	<u><i>Sorex merriami</i></u>	BLM SSC
Preble's shrew	<u><i>Sorex preblei</i></u>	BLM SSC
spotted bat	<u><i>Euderma maculatum</i></u>	BLM SSC
swift fox	<u><i>Vulpes velox</i></u>	BLM SSC
Townsend's big-eared bat	<u><i>Plecotus townsendii</i></u>	BLM SSC
Birds		
Baird's sparrow	<u><i>Ammodramus bairdii</i></u>	BLM SSC
bald eagle	<u><i>Haliaeetus leucocephalus</i></u>	FWS T
burrowing owl	<u><i>Athene cunicularia</i></u>	BLM SSC
dickcissel	<u><i>Spiza americana</i></u>	BLM SSC
ferruginous hawk	<u><i>Buteo regalis</i></u>	BLM SSC
hairy woodpecker	<u><i>Picoides villosus</i></u>	BLM SSC
interior least tern	<u><i>Sterna antillarum</i></u>	FWS E
LeConte's sparrow	<u><i>Ammodramus lecontei</i></u>	BLM SSC
loggerhead shrike	<u><i>Lanius ludovicianus</i></u>	BLM SSC
mountain plover	<u><i>Charadrius montanus</i></u>	BLM SSC FWS C
peregrine falcon	<u><i>Falco peregrinus</i></u>	FWS T
sage sparrow	<u><i>Amphispiza belli</i></u>	BLM SSC
Swainson's hawk	<u><i>Buteo swainsoni</i></u>	BLM SSC
Whooping Crane	<u><i>Gris americana</i></u>	FWS E
Reptiles		
snapping turtle	<u><i>Chelydra serpentina</i></u>	BLM SSC
spiny softshell turtle	<u><i>Trionyx spiniferus</i></u>	BLM SSC
Fish		
pallid sturgeon	<u><i>Scaphirhynchus albus</i></u>	FWS E
sicklefin chub	<u><i>Macrhybopsis meeki</i></u>	BLM SSC FWS C
sturgeon chub	<u><i>Macrhybopsis gelida</i></u>	BLM SSC FWS C
Plants		
smooth goosefoot	<u><i>Chenopodium subglabrum</i></u>	BLM W
bractless mentzelia	<u><i>Mentzelia nuda</i></u>	BLM W

BLM SSC = Bureau of Land Management Species of Special Concern

FWS C = Fish and Wildlife Service Candidate

FWS E = Fish and Wildlife Service Endangered

BLM W = Bureau of Land Management Watch

FWS T = Fish and Wildlife Service Threatened

APPENDIX E—DNRC Policy On Ground Breaking

SURFACE MANAGEMENT BUREAU

Management Memo: SM 93-5-1

Subject: PROCEDURES FOR GRANTING LAND BREAKING
ON STATE TRUST LAND

Author: Grady, Dirkson, Aberg, Chappell

Last Update: 5/24/93.

Updated by: KC

Status: -FINAL-

I. AUTHORITY

The authority for the Department to grant a lessee of State lands the right to cultivate such lands is contained in '77-6-209, MCA and 26.3.136, ARM. A lessee that desires to cultivate any part of the land they hold under lease shall make written application to the Department. The request shall include a map showing acreage location, Section, Township, Range, Lease Number and County.

Reclassification from Class 1 (grazing) to Class 3 (agriculture) requires completion of a capability inventory pursuant to '77-1-403, MCA. The capability inventory shall be made prior to reclassification and shall include information on the following:

1. Soils Capability
2. Vegetation
3. Wildlife Use
4. Mineral Characteristics
5. Public Use
6. Aesthetic Values
7. Cultural Values
8. Surrounding Land Use
9. Any other resources, zoning or planning information related to the classification.

Additional Information that should be included:

1. Soils data, topographic and aerial map
2. Written response from MT Department of Fish, Wildlife & Parks, Soil Conservation Service and/or Conservation District
3. Appropriate MEPA Document
4. Area Land or Unit Office special stipulations
5. Area Land or Unit Office recommendations
6. Recreational Use or Potential

II. GOALS

It is the goal of the Department to allow the tillage of State lands for agricultural purposes using acceptable tillage methods, conservation practices and specified criteria in order to generate the greatest income to the Trust and to protect the long term productivity of the trust resources.

III. OBJECTIVES

To review all applications for breaking requests of State land in a systematic manner.

To remain in compliance with current and future Farm Bill policies that will provide for the greatest protection of the land resources and sustaining the greatest yield to the lessee and the Trust.

To evaluate the conditions on the State lands being considered for agricultural crops based on the highest and best use.

IV. PROCEDURES

All break requests for native sod on State land shall be submitted to the Department in writing and shall outline the proposed action. Only Land Capability Class III or better will be considered for breaking on native sod. In general, small suitable areas scattered throughout a section of rangeland will not qualify for agricultural classification. However, small areas of suitable land may be broken if a more workable field with adjacent lands is the result. These situations must be handled on a case by case basis.

For dryland farming methods, the following requirements for breaking must be met:

1. The soils must be 20 inches or more in depth over shale, and bedrock.
2. The slopes must not be greater than 8%.
3. The soil texture should be loams through light clay.
4. There should not be over 35% coarse fragments throughout the soil profile.
5. The water table must be at least 30 inches below the surface during the growing season.
6. Saline or alkali conditions must be no more than slight as determined through soil testing and as suggested by soil surface conditions.
7. There must be no known saline seep potential, nor any potential to be a recharge area above an area showing signs of salinity.
8. Annual precipitation must be at least 10 inches per year.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.

10. Soils having the potential for extreme wind or water erosion shall not be broken even though the soil is Capability Class III.
11. Drainage areas must always be maintained in permanent grass waterways or by acceptable conservation practices.

For irrigation farming methods, the following requirements for breaking must be met:

1. Soil textures must be loams through clay of less than 50% clay fraction.
2. The available water holding capacity of the soil is three inches or more, within the first 24 inches of the soil profile.
3. There should not be over 35% coarse fragments throughout the profile.
4. The slopes must not be greater than 8% on sprinkler irrigation systems and 4% on flood irrigation systems.
5. The soils must be at least six feet in depth over shale or bedrock and must have drainage potential.
6. The water table must be at least 40 inches below the surface during the growing season.
7. Saline or alkali conditions must be no more than slight with good drainage and adequate, suitable irrigation water must be available.

8. There must be no known saline seep potential nor any potential to be a recharge area above an area showing signs of salinity.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.

All State Lands Other Than Native Sod

For lands other than native sod, breaking will require them to be a Capability Class III or better and the criteria outlined under native sod must be met. Those lands with Capability Class IV could be reviewed and accepted, only if meeting the following criteria:

For dryland farming methods, the following requirements for breaking must be met:

1. The soils must be 60 inches or more in depth over shale, and bedrock.
2. The slopes must not be greater than 8%.
3. The soil texture should be loams through clay.
4. There should not be over 35% coarse fragments throughout the soil profile.
5. Soils must have a soil loss tolerance (T) factor of 5 tons/acres/year.
6. Tillage of the soils must be done in such a manner that the combined wind and water erosion have a soil loss tolerance (T) factor not greater than 5 tons/acre/year.
7. Soils must have a Wind Erodibility Group (WEG) value not less than 4.
8. Soils must be capable of producing greater than 20 bushels per acre spring wheat as determined by SCS land capability classes and yield per acre of crops and pasture data.
9. The water table must be at least 20 inches below the surface during the growing season.
10. Saline or alkali conditions must be no more than slight as determined through soil testing and as suggested by soil surface conditions.
11. There must be no known saline seep potential, nor any potential to be a recharge area above an area showing signs of salinity.
12. Annual precipitation must be at least 10 inches per year.
13. The soils must not be subject to flooding or surface ponding during the regular growing season.
14. Drainage areas must always be maintained in permanent grass waterways or by acceptable conservation practices.

For irrigation farming methods, the following requirements for breaking must be met:

1. Soil textures must be loams through clay of less than 50% clay fraction.
2. The available water holding capacity of the soil is three inches or more, within the first 24 inches of the soil profile.
3. There should not be over 35% coarse fragments throughout the profile.
4. The slopes must not be greater than 8% on sprinkler irrigation systems and 4% on flood irrigation systems.
5. The soils must be at least six feet in depth over shale or bedrock and must have drainage potential.
6. The water table must be at least 40 inches below the surface during the growing season.
7. Saline or alkali conditions must be no more than slight with good drainage and adequate, suitable irrigation water must be available.
8. There must be no known saline seep potential nor any potential to be a recharge area above an area showing signs of salinity.
9. The soils must not be subject to flooding or surface ponding during the regular growing season.

If the place of use for the irrigation water is located on State lands, the water right must be filed in the name of the State. Special considerations should be noted on the lease if the source of water is not located on State lands.

Department Review

All break requests, whether submitted to the main office in Helena or the Area Land Office, shall be initially addressed by the Area Land Office in which the lease is located. All land breaking requests must be evaluated by an on-the-ground inspection to assure that the best interests of the Trust are being served.

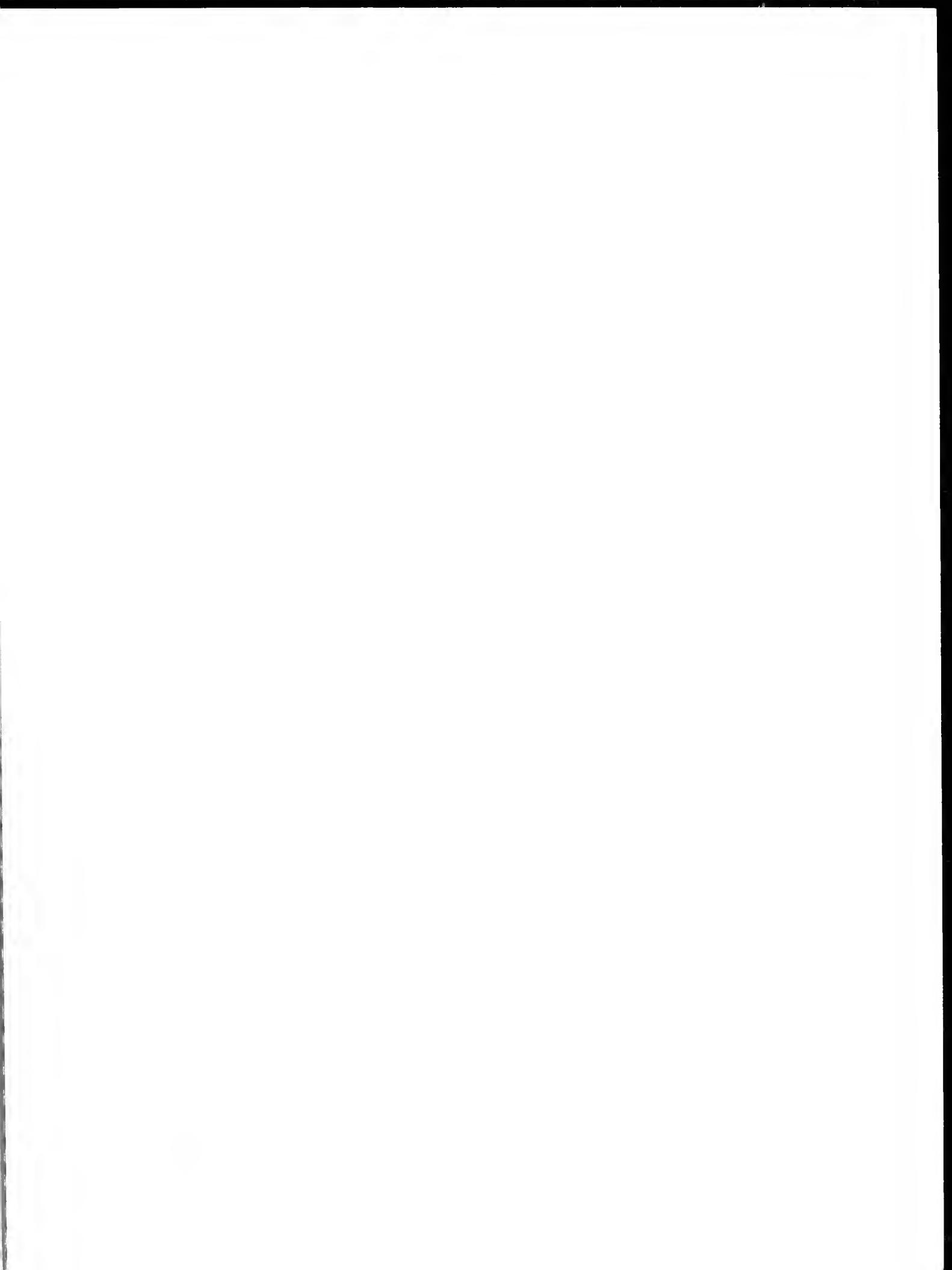
Upon receipt of the land breaking request, the Area Land Office shall contact the appropriate Conservation District or SCS office for any input that may be required or useful. Data such as maps, aerial photographs, range evaluations, soils information and other pertinent data should be reviewed before completing the land breaking proposal. Other appropriate agencies, including the Department of Fish, Wildlife and Parks, shall be contacted requesting a written response of any concerns regarding the land breaking request. The appropriateness of all comments shall be evaluated and considered before the request to break the land is approved. If the request for breaking the land is obviously not in the best interests of the Trust and/or if the land is not suitable for agricultural purposes at the initial on-the-ground inspection, the lessee shall be notified by the Area Land Office that the request is denied. A copy of the notification shall be sent to the Surface Management Bureau. If the Area Land Office does not notify the lessee, the notification will be by the Surface Management Bureau.

If the initial review indicates that the land may be suitable for agricultural purposes, the Area Land Office shall develop a land breaking proposal. The Area Land Office will submit the land breaking proposal, including their recommendations and the documentation required in the Break Request/Range Renovation check-off sheet, to the Surface Management Bureau.

The Surface Management Bureau shall analyze the proposed breaking request and consult with the Area Land Office over any concerns, or information deficiencies. If, after consultation with the Area Land Office, the Surface Management Bureau determines the breaking should be denied, the Surface Management Bureau shall make that recommendation to the Lands Division Administrator. If the Lands Division Administrator agrees with the recommendation of the Surface Management Bureau, then the Surface Management Bureau shall contact the lessee, in writing, denying the request to break State lands.

If, after consultation with the Area Office, the Surface Management Bureau recommends approval of the breaking request, it will address any concerns and propose any additional stipulations to meet the requirements of the Montana Environmental Policy Act (MEPA) and the Montana Antiquities Act.

The Surface Management Bureau will make the final recommendation for reclassification and request to break to the Lands Division Administrator. If the Lands Division Administrator agrees with the recommendation of the Surface Management Bureau, the Surface Management Bureau will contact the lessee granting approval to break State lands, along with any Supplemental Lease Agreement (SEA). The Area Land office shall monitor the tract to assure that recommendations and stipulations attached under a Supplemental Lease Agreement are carried out as intended.





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